







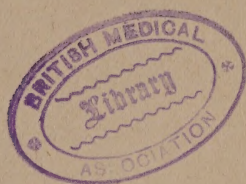
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ANNUAL REPORT

OF THE

SUPERVISING SURGEON-GENERAL

OF THE

MARINE-HOSPITAL SERVICE OF THE UNITED STATES

FOR THE

FISCAL YEAR 1893.

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IN TWO VOLUMES  
VOLUME II.

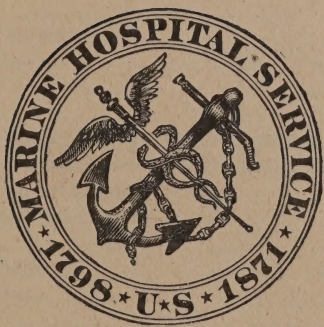
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## COMMISSION TO OBTAIN INFORMATION CONCERN- ING CHOLERA IN FOREIGN COUNTRIES.

A very important measure, looking to the prevention of the introduction of cholera into the United States during 1893, was the appointment of a commission consisting of Surg. Fairfax Irwin, of the Marine-Hospital Service, and Dr. Walter Kempster, for the purpose of visiting foreign ports and places, with a view to keeping the Bureau informed of the existence of cholera and the special dangers to be apprehended through immigration and importation of merchandise. These gentlemen started on their mission December, 1892, but before its completion it was necessary to relieve Surgeon Irwin, on account of the existence of cholera in Marseilles, and assign him to duty at that port. Dr. Kempster continued his investigations alone. Information from these officers was forwarded at brief intervals, either by cable or by letter, and many of their communications were published in the Abstract of Sanitary Reports. A full report of the commission, of great permanent value, is included in this volume.

### MEDICAL OFFICERS AT FOREIGN PORTS.

Reports are also appended from the several medical officers detailed for duty in foreign ports. The essential facts contained in these reports were also published from time to time in the Weekly Abstracts.

As indicating the direct benefit to the United States of the presence of these officers in foreign ports, a statement is herewith transmitted from one of them, showing the results of the sanitary inspection of vessels bound for the United States, as compared with the results of want of such inspection of vessels bound for South America. The following is the statement:

U. S. MARINE-HOSPITAL SERVICE,  
MIDDLE ATLANTIC DISTRICT,  
New York, March 4, 1894.

SIR: The appended is a brief statement of the facts in regard to the ships leaving Naples during the height of the cholera:

From the 15th of July to August 17 there were eight vessels cleared from Naples with steerage passengers; four for New York and four for South American ports. The first to leave was the *Karamania* for New York on July 15. No cholera at that time existed in Naples. The first case occurred on the night of the 16th, and the result of the bacteriological examination was not known until the afternoon of the 17th or morning of the 18th. The passengers for the *Karamania* and this ship itself were put through the routine I had established. The ship was cleaned, ventilation, etc., altered to conform with our law, closets and hospitals put in good order, water and food supply attended to, passengers inspected and vaccinated, and both their baggage and clothing searched for food. Three days after sailing, i. e., on the 18th, a death from cholera occurred, and just before reaching New York there were two more. It is not unlikely that the infection in the first case was traceable to the same source as those occurring in Naples on the 16th. I am of the opinion that but for the careful exclusion of food brought by passengers there would have been more cases on the remaining three ships for the United States. The regulations governing infected ports were rigidly enforced. In the first case, the *Massilia*, the passengers were met at the trains and conducted imme-

diately on board; were then isolated three days and all their baggage transferred across the city unopened. All food was carefully looked into; all from persons or baggage excluded, and the baggage of a few about whose antecedents there was doubt disinfected by steam. The ship was warped out some distance from the pier every night and an inspector kept on board night and day. There being no cholera known to exist anywhere in Italy, outside of Naples, it was not thought necessary to disinfect all baggage or isolate five days. She arrived safely in New York without mishap.

The remaining two for the United States were the *Weser* and *Cashmire*. In both cases the regulations were enforced in detail. One lay about a mile and a half off shore during her five days. The other cruised at sea. In both cases an inspector was kept aboard day and night. Both escaped cholera.

The four for South America with the result in each case were as follows: The figures are not official, but are practically accurate in every respect. All were turned back by the South American authorities. *Vencenzio Florio* had about 50 deaths; *Andrea Dorio* 90 on way out, total not ascertained; *El Remo*, 84 deaths; *Carlo R.*, about 230 deaths.

To summarize, then, eight ships left Naples. The water supply was the same, the food about the same, the class of passengers identical, and their places of origin similar, in many cases identical. All four leaving without precautions became floating pesthouses. Of the four for the United States the one leaving before cholera appeared in Naples had 3 deaths. The other three were made to conform to the regulations and all escaped. In other words, every ship that left Naples had cholera except those in whose case the "infected-port" regulations were carried out; and of the five that had cholera the only one that escaped with less than 50 deaths was the one on which our "noninfected port" regulations were enforced, she having only 3 deaths en route. In addition the enforcement of the regulations compelled the abandonment of a number of others sailing for the United States. The escape of the *Massilia*, *Cashmire*, and *Weser* may be "post" and not "propter hoc;" but we certainly have the right to consider the evidence to be strongly on the side of "propter." If I had it to do over again I would make them all cruise during their five days.

Very respectfully,

G. B. YOUNG,

Assistant Surgeon, M. H. S.

SUPERVISING SURGEON GENERAL U. S. MARINE-HOSPITAL SERVICE,

Washington, D. C.

#### CHOLERA AT NEW YORK QUARANTINE.

On August 4, 1893, the health officer of the port of New York telegraphed the Bureau of the arrival of the steamship *Karamania*, August 3, from Naples, having had two deaths from cholera just before reaching port. The vessel and passengers were detained in quarantine until August 14. There were 21 cases and 3 deaths from cholera among the immigrants from this vessel.

On October 8 the steamship *Russia*, from Hamburg, arrived at the Quarantine, having had 5 suspicious deaths during the voyage. Bacteriological examination in the case of one of the immigrants who died immediately before arrival proved the case to be one of cholera. The immigrants were isolated on Hoffman Island and the ship held under observation. But one death occurred on Swinburne Island.

On the arrival of the *Karamania* an invitation was received from the quarantine officer at the port of New York for the cooperation of any member of the Marine-Hospital Service who might be sent for purposes of observation, and Passed



Assistant Surg. J. J. Kinyoun was thereupon detailed to act as inspector at the New York Quarantine, under the following letter of instruction:

TREASURY DEPARTMENT,  
OFFICE OF THE SUPERVISING SURGEON-GENERAL,  
MARINE-HOSPITAL SERVICE,  
*Washington, D. C., August 12, 1893.*

SIR: Confirming the telegraphic instructions recently given to you, and in addition thereto, you are informed that you are detailed as inspector at the New York Quarantine. This duty is assigned to you in conformity with the act of Congress, approved February 15, 1893, entitled, "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," and in conformity with the opinion of the Solicitor of the Treasury, regarding the rights and duties of the Supervising Surgeon-General of the Marine-Hospital Service, in his relation to State and local quarantines. This opinion will be found printed in the current number of the Abstract of Sanitary Reports, issued August 11. The prevalence of cholera on Swinburne Island and the repeated appearance of the same disease among the suspects on Hoffman Island, render it necessary that the greatest care should be exercised to prevent any transmission of the same to the neighboring shores or to the city of New York. It is your duty to ascertain by observation whether all the rules and regulations promulgated by the Secretary of the Treasury, copies of which are in your possession, are complied with. Furthermore, in the interests of the interstate quarantine service and the various boards of health in the interior, it is necessary that such baggage as, under the regulations, must be disinfected at the New York Quarantine and certified to by the quarantine officer of that port, should be certified to by yourself.

You are informed that the Bureau has offered to render any assistance possible to the quarantine officer in the present emergency, and you will promptly notify the Bureau if such request is made, acting immediately, if immediate action is required.

You are informed that by direction of the Secretary of the Treasury, the revenue cutter *Washington* has been placed at your disposal for the purpose of assisting you in carrying out these instructions.

You are also informed that, in case of necessity of assistance, such assistance as may be demanded by you will be furnished,

You are further directed to report daily to the Bureau, using the telegraph, if necessary, calling attention to any procedures that, in your opinion, are required as protective measures against the introduction of cholera.

You are informed that your position as inspector is not exceptional, as under regulations inspections have been made at other quarantines and a similar procedure will be adopted at any port in the United States at which a case of cholera may appear.

WALTER WYMAN,  
*Supervising Surgeon-General, Marine-Hospital Service.*

Passed Assistant Surgeon J. J. KINYOUN,  
*U. S. Marine-Hospital Service,  
Quarantine Station, Staten Island, New York.*

CHOLERA IN JERSEY CITY.

On August 30 information was received of two suspicious deaths in Jersey City, and Surg. P. H. Bailhache and Passed Assistant Surg. J. J. Kinyoun were detailed to investigate the matter. On September 1 Dr. Kinyoun reported that his bacteriological examination in one case proved that the patient had died of true cholera.

Acting on this information and by request from the officers of the New York board of health the Supervising Surgeon-General proceeded to New York and held a conference on the evening of September 1 with the president of the New York board of health, the health commissioner of New York City, and with the repre-

sentative of the secretary of the State board of health of New Jersey. Early Friday morning a conference was held between the Surgeon-General and Police Commissioner Feeny and Health Commissioner Benjamin, of Jersey City, together with the representative of the secretary of the State board of health.

It was shown at this conference that the Jersey City health authorities had already taken active measures to prevent the spread of the disease. A house-to-house inspection of the premises in the infected districts had already been instituted, together with disinfection of the infected and suspected premises. All the suspected premises were under quarantine. It was learned that the health authorities had been active during the summer, and that 5,000 nuisances had been abated since March 1 by the board.

The act of Congress approved February 15, 1893, was read at this conference, and the position of the representatives of the General Government in such a crisis was stated to be as follows:

The medical officers of the Marine-Hospital Service were, by virtue of the law, to act as inspectors to ascertain if the necessary measures for the prevention of the spread of the disease were being carried out. They would also cooperate with and aid the State and local boards in every possible manner.

The State board of health of New Jersey has supervision over the local boards, similar to that of the National Government over State and local boards. It was found that the local health authorities were active; that they had an excellent corps of sanitary policemen, but that their immediate need was for physicians experienced in matters of this kind. Their invitation, both to the State board and to the Marine-Hospital Service, to furnish aid of this character was accepted, all operations to be carried on through the agency of the local authorities. In accordance with this agreement, Surg. Preston H. Bailhache, of the United States Marine-Hospital Service, was immediately detailed by the Surgeon-General, and to assist him, Surg. H. W. Sawtelle and Assistant Surg. J. A. Nydegger.

Four physicians, whose services had been previously contracted for in the event of such an emergency, were immediately summoned from New York and placed on duty under the supervision of Surg. Bailhache. Three medical officers of the State board of health were also placed on duty, the State board of health being represented by Dr. A. Clark Hunt, State sanitary inspector. The temporary services of Dr. Bond, of the New York City board of health, an expert in practical disinfection, had been previously tendered by the said board, and the work of disinfection with a full corps of assistants and a supply of disinfecting material was immediately begun by that officer. All the necessary precautionary measures were thus provided for and an effective and harmonious organization was immediately put into operation.

On September 9, there having been no development of other cases, the medical officers of the Marine-Hospital Service on duty at Jersey City were relieved.

#### RELIEF FOR THE SEA ISLANDS OF SOUTH CAROLINA.

On August 27th a violent storm visited the South Atlantic coast and caused an inundation of many of the islands contiguous to the coast of South Carolina. Great apprehension was felt that on account of the large number of dead animals unburied, the occlusion of drains, and the filling of the wells with salt water, sickness of an epidemic character would break out among the survivors of the storm. Urgent appeals were made to the Government to prevent this, and after an affirmative opinion had been received from the Solicitor of the Treasury as to the legality of the expenditure, a recommendation was made and approved by the Secretary of the Treasury, in accordance with which the President allotted \$5,000 of the epidemic fund for sanitary work. This was carried on under the direction of Passed Assistant Surg. George M. Magruder, whose report was published in full in the Abstract of Sanitary Reports, dated November 10, 1893.

## YELLOW FEVER IN THE SOUTH IN 1893.

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### THE BRUNSWICK EPIDEMIC.

June 15, 1893, the American barkentine *Anita Berwind* arrived at the Brunswick, Ga., quarantine. She cleared June 19 for Conquest's wharf, on the Satilla River, Georgia, 56 miles from Brunswick, arriving there on the 20th; on the evening of which day the master took to his bed. On June 21 he was moved to Conquest's camp, a cross-tie camp 8 miles distant from the wharf, where he died June 25 of yellow fever. The vessel was immediately sent to the national quarantine station at Blackbeard Island and 25 stevedores who had been loading her were also sent there for detention and observation. Surg. H. R. Carter was immediately ordered to Conquest's camp and, assisted by Dr. W. F. Brunner, the health officer of Savannah, took every possible precaution to prevent the spread of the disease, keeping the 73 persons in the camp under a close observation, burning and boiling all the possibly infected articles and disinfecting the house wherein the patient died. Owing to the thoroughness of this work there was no development of the fever in the camp or at the wharf. The master of the vessel was said to have been feeling badly before leaving Brunswick quarantine and was known to have visited the city. This led to an inspection of the Brunswick quarantine by Surg. Carter, by which it was shown that there was gross violation, not only of the United States quarantine regulations, but of ordinary quarantine principles.

The action of the Bureau is set forth in the following letter:

TREASURY DEPARTMENT,  
OFFICE OF THE SUPERVISING SURGEON-GENERAL,  
MARINE-HOSPITAL SERVICE,  
Washington, D. C., July 20, 1893.

SIR: I have the honor to state that on June 27 I received the following dispatch from the health officer at Savannah, Ga.:

"Master of vessel died ashore on Satilla River of yellow fever. Vessel ordered to Sapelo. No health organization. Situation needs immediate attention. Will cooperate with Carter. Let us have him. Sanitary Board expects Service to act quickly."

Acting on this dispatch, I directed Surg. Carter to proceed to Satilla River and take all necessary precautions to prevent the spread of the disease. A report has been received from Surg. Carter detailing his action. It is only necessary here to state that he was occupied in this work about two weeks, and by adopting most vigorous sanitary measures it is believed that any further spread of the disease has been prevented. Surg. Carter then, under the direction of this Bureau, investigated the quarantine service at Brunswick, Ga., at which port the vessel that brought the yellow-fever infection was admitted to entry.

His report is herewith inclosed. This report shows most conclusively that the quarantine regulations promulgated by the Secretary of the Treasury were not enforced with regard to the bark *Anita Berwind*, on which vessel the captain, who died of yellow fever, was taken sick, and that the quarantine authorities at Brunswick have constantly during this season failed to comply with the said regu-



lations. On account of this laxity, which still threatens to bring disaster, I am satisfied that the National Government should assume control of this quarantine in accordance with section 3 of the act of February 15, 1893, which states, "If the State or municipal authorities shall fail or refuse to enforce said rules and regulations, the President shall execute and enforce the same, and adopt such measures as in his judgment shall be necessary to prevent the introduction and spread of such disease, and may detail or appoint officers for that purpose."

I will add that the State of Georgia has no State board of health, and that the quarantine at Brunswick is of a local character altogether. I have, therefore, to recommend that Assistant Surg. John W. Branham, U. S. Marine-Hospital Service, be detailed immediately by the President to enforce the rules and regulations which have been duly promulgated by the Secretary of the Treasury. Assistant Surg. Branham has already had quarantine experience, is a native of Georgia, and is considered well qualified to perform this duty.

I have the honor to remain, very respectfully, yours,

WALTER WYMAN,

*Supervising Surgeon-General, M. H. S.*

The SECRETARY OF THE TREASURY.

TREASURY DEPARTMENT.

Approved:

J. G. CARLISLE, *Secretary.*

EXECUTIVE MANSION.

Approved:

GROVER CLEVELAND.

Dr. Branham took charge of the quarantine July 31 and died of yellow fever August 20. Under a misapprehension of the nature of his disease he had been removed by the health officer of Brunswick from the quarantine into the city for treatment. From the reports which follow it will be seen that there were a number of infected localities in Brunswick at the time, and the evidence does not warrant the assumption that Dr. Branham was the cause of the city's infection. From Surg. Murray's report it appears that he may possibly have contracted the disease from the ballast pile in Brunswick, but at the same time the colored laborers engaged in discharging ballast at the quarantine (21 in all) had free access to the city, and it was through them or other media, and not through Dr. Branham, that the disease was probably introduced and generally disseminated as early as or prior to August 5. Dr. Branham was in the city on the 10th of August; in the afternoon returned to quarantine on his way to the station; was seized with a chill, which was followed the next day by a fever; was removed on the 11th to the city, and on the 12th was reported as suffering from yellow fever.

Dr. Branham did not see a single yellow-fever case, nor did he inspect an infected vessel. It is remarkable that yellow fever prevailed extensively among the colored people, and the assumption by Surg. Murray that the disease was introduced by the colored ballast laborers, who immediately after performing their duties in discharging ballast of infected ships freely visited the city, is most probably the correct explanation of the cause of the epidemic.

Examination of the mortuary records of Brunswick indicated subsequently that the disease had prevailed in the city some weeks before the Branham case, and it has been established beyond question that the same disease prevailed in the same city in October, 1890, both by an examination of the mortuary records of that time and through the well-authenticated testimony of one of the physicians of Brunswick, who admitted that he had been treating patients with yellow fever, and that only a frost would prevent its becoming epidemic, which was fortunately the case.

Surg. W. H. H. Hutton was immediately ordered from Norfolk and Surg. H. R. Carter from Pensacola, the former arriving at Brunswick August 14, the latter on the morning of the 15th.

As will be seen by the reports, vigorous disinfection of the first infected premises, depopulation of limited areas and guarding the same, was carried on with apparently favorable results. August 17, Sanitary Inspector John Guiteras arrived, to assist in the preventive measures. On the 8th of September, there having been three deaths, and fifteen days having expired since the last death, on recommendation of Surg. Hutton, the report of Sanitary Inspector Guiteras that he had "finished an examination of the cases of fever existing at present and none are suspicious," and report of Passed Assistant Surg. G. M. Magruder, stating, "there seems to be no cause existing for continuing the quarantine," orders were issued to raise the quarantine.

In the meantime all arrangements had been made for the rapid construction of a detention camp at Waynesville, Ga., 25 miles distant, under the direction of Surg. Hutton, which was completed, ready for occupancy, by September 2. On September 10 Surg. Hutton was obliged to be relieved on account of physical debility.

On September 13 two additional deaths from yellow fever were reported by Sanitary Inspector Guiteras, in one of which a certificate of death from consumption had been given. Instructions were immediately telegraphed to employ necessary help for quarantining and disinfecting the infected localities. Passed Assistant Surg. H. D. Geddings arrived under orders September 16. Surg. R. D. Murray was ordered from Key West Quarantine (Dry Tortugas), arriving September 18, and reported a strict cordon established. The Postmaster-General was requested to have the mails from Brunswick disinfected. Train inspectors were appointed at Jesup and Waycross. Passed Assistant Surg. Geddings was ordered to assume command of the detention camp at Waynesville. The railway companies were instructed to sell no tickets south of Atlanta, and on the 16th directions were given to open the camp immediately and make it the only outlet from Brunswick. On the 17th the disease was declared epidemic by the Brunswick board of health. On the 18th Dr. Paul Von Seydewitz, of New Orleans, was ordered to Atlanta to consult with railway authorities and to prevent Brunswick refugees from going south, particularly to Florida. The camp was officially opened September 18, under the immediate command of Passed Assistant Surg. Geddings, Surg. Murray being the officer in command of all measures in the infected district. At that time there were 20 known cases in various portions of the city, 11 being reported in one day. In addition to the land cordon, a guard of 6 men with three boats as a day and night patrol was established on the Cumberland River to prevent refugees going to Florida by water. Guards were also stationed with boats at convenient points on the mainland and on the adjacent islands to intercept refugees going north by water, the cordon thus being made complete both on land and water.

A number of physicians of reputation, who had themselves had yellow fever and experience in treating the disease, were immediately engaged by the Bureau and sent to Brunswick. The details connected with the management of the epidemic will all be found in the appended reports of the several officers; but in general it may be stated that Surg. Murray, with a full corps of accomplished surgeons and an experienced hospital steward, was in command within the city, and that his efforts to prevent the contagion reaching other portions of the country were supplemented by the assistance of the revenue cutters at Beaufort and Savannah, carrying medical officers of the Marine-Hospital Service, patrolling the waterways north of Brunswick to inspect the guards stationed therein, and in one instance capturing a boat load of refugees and carrying them to the

neighboring national quarantine station at Blackbeard Island to undergo a period of detention.

October 4, Surg. H. R. Carter, who had been temporarily transferred for duty in Washington, was ordered to Way Cross with the triple object of investigating rumors of yellow fever prevailing in various localities to which Brunswick refugees had resorted; to intercept any refugees who might escape through the cordon lines, and to establish a system of train inspection which would permit the railroads to continue traffic without interruption from the sanitary authorities of the various small cities alarmed at the possibility of infected persons coming within their borders. Surg. Carter was assisted by Assistant Surg. J. A. Nydegger, Marine-Hospital Service, and a corps of sanitary inspectors.

This service on the outside of the infected area was a new feature in epidemic management and proved very efficacious. It will be seen from Surg. Carter's report that fourteen places were inspected by him in which it was feared yellow fever existed, and his authoritative statement relieved the communities (with one exception, Hazelhurst) of the suspicion that rested upon them. Apprehension was also relieved by Surg. Carter's action in compelling Brunswick refugees to remove from towns adjacent to the railroads to more remote and isolated localities.

The epidemic was declared at an end November 25. The detention camp was closed November 30. The total number of cases of yellow fever in Brunswick during the epidemic was 1,070, with 46 deaths. The disease prevailed at no other locality excepting at Jesup, which, as will be seen by Surg. Murray's report, became infected before the disease was declared epidemic in Brunswick.

#### POST EPIDEMIC DISINFECTION.

As soon as the epidemic was declared at an end a thorough disinfection of infected houses was begun and pushed to completion. The disinfecting car which had been in use at the detention camp was transported to Jesup and a thorough disinfection of houses, bedding, etc., was conducted personally by Surg. H. R. Carter. The car was then removed to Brunswick and the same procedures were conducted by Surgeons Murray and Carter.

Appended are the following reports: (a) Report of Surg. W. H. H. Hutton, who was first in command at Brunswick after the announcement of the illness of Dr. Branham, but who was relieved by reason of severe illness September 10. (b) Reports by Surg. Murray—first, on the management of the epidemic in Brunswick; second, on local relief furnished; third, on the method of introduction of the disease; fourth, on the yellow fever at Jesup; fifth, on the yellow fever at South End, St. Simons Island; sixth, on commerce and labor. (c) Report of Passed Assistant Surg. H. D. Geddings, in command of detention camp. (d) Report of Surg. H. R. Carter upon train-inspection service. (e) Necropsy report by Surg. Murray. •

#### REPORTED YELLOW FEVER AT PENSACOLA, FLA.

August 9 information was received from the president of the board of health of Escambia County, Fla., that there had been two deaths from yellow fever in Pensacola.

After a consultation held in Washington with representatives from the city of Pensacola, the Secretary and Surgeon-General of the Navy, the Secretary of War, and the Surgeon-General of the Army (the Navy being interested by reason of the close proximity of the naval reservation and the Army by reason of the proximity of Fort Barrancas), Surg. Murray, Surg. Carter, and Passed Assistant Surg. Magruder were immediately ordered, August 10, to Pensacola, to assist in the preventive measures in that city and to protect the naval reservations. A cordon was established by Surg. Carter around the naval reservation. Marine-



Hospital officers were ordered to act as inspectors and to give aid to the State health officer, Dr. J. Y. Porter, who arrived on the 11th, to assume supervision of affairs. On request of State Health Officer Porter the cordon was removed August 18, there having been no further development of the disease.

August 18 an announcement was signed by J. Y. Porter, State health officer; Surg. Murray, Passed Assistant Surg. Magruder, and Dr. Robert W. Hargis, president Escambia County board of health, that after a thorough and careful inspection of the city of Pensacola, they had failed to find the existence of any infectious disease whatever.

#### REPORTED YELLOW FEVER AT TAMPA, FLA.

On August 30 a case of yellow fever was reported on the dock at Port Tampa, and August 31 Surg. Murray was ordered to establish a cordon. He reported that the patient was isolated in the dock office; that there was no need of a camp; that Port Tampa city and the Port Tampa docks were quarantined by an armed patrol.

On September 2 Dr. J. Y. Porter, State health officer, reported the suspicious case reported on the 29th to be a mistake, and Surg. Murray reported "restrictions removed."

Following are the regulations prepared in the Marine-Hospital Bureau and promulgated by the Secretary of the Treasury to prevent the spread of yellow fever:

#### UNITED STATES QUARANTINE RULES TO BE OBSERVED IN PLACES INFECTED WITH YELLOW FEVER.

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,

Washington, D. C., August 12, 1893.

*To Medical Officers of the Marine-Hospital Service, Quarantine Officers in the United States, and others concerned:*

Pursuant to the act of February 15, 1893, entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine-Hospital Service," the following regulations have been made thereunder and are hereby promulgated according to the terms of the act:

1. All persons affected with yellow fever, or who are believed to have been exposed to the infection, will be isolated under observation until free from infection and all their effects properly disinfected. Communication with infected places will not be allowed except for the necessary conveyance of supplies, etc., which must be under the supervision of a duly qualified medical sanitary inspector.

2. The localities contiguous to those infected and infected localities, so far as it may be safely done, should be depopulated as rapidly and as completely as possible; persons from noninfected localities, and who have not been exposed, leaving without detention; those who have been exposed or who come from infected localities, being required to undergo a period of detention of ten days from date of last exposure in camps of probation. The clothing or any thing capable of conveying infection shall not be allowed to leave the infected locality without disinfection.

3. Camps of probation shall be inspected twice daily or oftener, and the suspects should be conveniently segregated in groups. A hospital sufficiently isolated shall be provided for each probation camp.

4. When practicable, camps of detention should be provided for those who require it.

5. Buildings in which cases of yellow fever have occurred and localities believed to be infected must be disinfected as thoroughly as possible.

6. As soon as the disease shall have been declared epidemic the railway trains carrying persons who may be allowed to depart from a city or place infected with yellow fever shall be under medical supervision. A medical sanitary inspector

should accompany each train when practicable, and enforce prompt isolation of any person who may be attacked with the disease, and report the same immediately to the proper health authorities. When, in the opinion of the proper health authorities, it is necessary, the railroad companies should be required to attach an extra car for hospital purposes to each train carrying persons from an infected place, which may be side tracked at some safe and convenient locality on the road.

CHARLES S. HAMLIN,  
*Acting Secretary.*

REPORT OF SURG. W. H. H. HUTTON ON THE OUTBREAK OF YELLOW FEVER AT  
BRUNSWICK, CONSTRUCTION OF DETENTION CAMP, AND CAUSE OF THE INFECTION.

SIR: I have the honor to submit the following report relative to the recent epidemic of yellow fever in Brunswick, Ga., in so far as my official connection therewith was concerned.

In obedience to Bureau telegram of August 12, 1893, directing me to proceed immediately to Brunswick, I arrived at that port on the evening of August 14, 1893. Soon after my arrival I visited Assistant Surg. J. W. Branham, Marine-Hospital Service, who had been reported as suffering from yellow fever at the house of his cousin, Dr. Branham, located about half a mile northeasterly from the business center of the city. By order of the city board of health this house had been under quarantine about forty-eight hours, and in the house, and restricted thereto, were Drs. Dunwoody, Branham, a nurse, and a cook, attending the sick patient.

I found Assistant Surg. Branham very ill. He had been recently transferred to Brunswick, and placed in charge of the local quarantine at that port, located on the river about 3 miles below the city. He had not confined himself to the quarantine station, but visited the city three or four times during the ten days or two week he had been in command. (Am not certain as to date he took charge of station.) On the 10th of August he was in the city and witnessed a game of baseball. Later in the afternoon he returned to the quarantine station on a steamer plying between Brunswick and St. Simons and Jekyl islands. He was seized with a violent chill on the steamer just before debarking. The chill was followed by a raging fever, with which, he told me, he suffered also excruciating headache and lumbar pains. Next morning he called by telephone for Dr. Dunwoody. The latter proceeded at once to the quarantine station, and, deciding that Assistant Surg. Branham was suffering from malarial remittent fever, removed him to the city. On the 12th Dr. Dunwoody reported to the Bureau that Dr. Branham had yellow fever. Surg. Carter arrived on the morning of August 15, and soon thereafter he, I, and several of the profession of Brunswick visited the patient and thoroughly examined him. At noon we met the city board of health, and for three hours discussed the case in all its aspects, Carter and myself maintaining that the "most probable diagnosis" was yellow fever, medical and lay members of the board of health insisting that all the symptoms pointed toward the many forms of malarial fever prevalent at the South Atlantic and Gulf coasts. Finding a majority of opinions were against Carter and myself, Carter suggested an adjournment until 8 p. m., and that in the meantime Dr. Hazelhurst, a local physician familiar with yellow fever, and Dr. Le Garé, of New Orleans, a visitor at Brunswick, also familiar with yellow fever (and whose views, clearly expressed, tended toward the malarial hypothesis of the case, but would not be absolute without an inspection), be allowed to visit and examine Dr. Branham and report at the adjourned meeting. At 8 p. m. the board again met. Drs. Hazelhurst and Le Garé reported they had carefully examined the patient and felt it their duty to confirm the diagnosis of Surgs. Carter and Hutton; and accordingly the board of

health announced the presence of yellow fever in Brunswick. As the city was financially embarrassed in consequence of the failure of three of their banks a few months previously, Carter and myself, as representatives of the General Government, were requested and authorized to take charge of the matter and do everything possible to control the infection.

At this time the consensus of opinion was that Assistant Surg. Branham had contracted the fever at the quarantine station, and that there was not then, nor had there been previously, any other cases of the fever in the city. Besides, apparently for the first time in the history of yellow fever in a populous city, a diagnosis of such had been made before one or more deaths from the infection had occurred and been confirmed by an autopsy.

Accordingly, with the foregoing knowledge before us, Dr. Carter and myself agreed that the matter was worthy of our utmost efforts to confine the infection to its then only known focus, and if possible to "stamp it out." With this end in view Dr. Carter, who is not immune, volunteered to attend the sick officer, with Dr. Hazelhurst as assistant, and two immune nurses. It was decided Drs. Dunwoody and Branham and the nurse then in attendance should be disinfected and sent at once to the South Atlantic quarantine station, inasmuch as having been exposed to the infection, and being nonimmune, it were proper they should develop the disease, if such should prove to be the case, away from the city.

Whilst Dr. Carter was attending to the foregoing, accompanied by Dr. J. L. Horsey, assistant health officer of the State of Florida, I visited every inhabited house in the block in which the Branham house was situated, and the four contiguous blocks, and informed the people thereof that, while every man's home was his castle, and I had no authority to order them out, yet on the following morning I would extend a cordon around the entire five blocks, after which it would be impossible for them to get out of the quarantine district till further orders. Accordingly, this district depopulated itself at once.

At the same time Surg. Carter and Dr. Hazelhurst, with immune nurses and cook, took charge of the sick officer, and Drs. Dunwoody and Branham and the nonimmune nurse were disinfected, put aboard a tug, and sent to the South Atlantic quarantine station to undergo sufficient detention and observation to determine whether or not they became infected during their four days' enforced confinement with the sick patient.

At the same time I proceeded personally to disinfect the infected, or supposed infected neighborhood. All débris under and around the Branham house and three contiguous houses and outbuildings was collected and burned; all the underpinning underneath these houses, cesspools, water-closets, stables, and grounds drenched with solution of  $\text{HgCl}_2$ , 1-600, combined with  $\text{HCl}$ , about 2,000 gallons being used in the three days I carried on this work, with the aid of three colored men. The streets surrounding the Branham block were drenched from fence to fence with a strong solution of crude carbolic acid and  $\text{Fe}_2\text{SO}_4$ .

August 20 Assistant Surg. Branham died at 5 p. m., after a sickness of ten days, and was buried with every precaution possible, and preparations made for the thorough disinfection of the interior of the Branham house, on the presumption that, so far, the case of the dead officer was the only case in the city, and still under the belief that he had contracted the disease at the quarantine station.

There had been daily meetings of the board of health since the 15th, and so far nothing to the contrary had been reported. Early on the morning of the 21st Dr. John Guitéras, of the University of Pennsylvania, who had been appointed sanitary inspector, and ordered by yourself to Brunswick as clinical expert, was taken by Dr. Hugh Burford to see a sick man by the name of Harris, lying at the Presbyterian parsonage, two blocks from the Branham house. Harris had been living in Oak Park, three-quarters of a mile northeast from the Branham house;



was feeling unwell on the evening of the 19th, and instead of going to his home stopped at the parsonage, the minister and family having left the city. Dr. Guitéras diagnosed the case as one of yellow fever. We decided still to continue our efforts to control the infection. Accordingly, the sick man was moved to the Branham house, inside of the cordon, the brother of Harris, who was nursing him, sent at once to the South Atlantic quarantine, and the parsonage disinfected.

With the announcement officially of this second known case of yellow fever in the city, his honor the mayor of this city issued a proclamation advising everybody if possible to leave. As we knew of only the two cases of known yellow fever, we did not think it necessary as yet to prevent the people leaving. About this time Dr. Guitéras, who had for several days been examining the mortuary records of the city for some time past, had arrived at the conclusion that the infection had existed in the city for a month or more prior to the case of Assistant Surg. Branham, but his evidence was not sufficiently pronounced to be absolutely certain of it, but that he was positive yellow fever was prevalent in Brunswick in October, 1890, but was kept concealed from the country at large. Of the latter opinion I shall furnish evidence later on.

With the suspicions of Dr. Guitéras, and the fact that no known connection existed between the case of Assistant Surg. Branham and that of Harris, the idea that Branham contracted the disease at the quarantine station was negatived, and it was assumed that he had been infected in the city and that the city was infected. Such being the case, the probabilities were that the disease would become epidemic, and preparation for properly caring for the people of the infected city and preventing the spread thereof should be made at once. Accordingly, I went out the Brunswick and Western Railroad 30 miles to inform myself of the topography of the country, with a view of selecting a site for a camp of probation similar to that of Camp Perry in 1888. On my return that evening, your telegram of the 21st relative to the demands of Augusta and Savannah for the establishment of a detention camp was received, and on the morning of the 22d, with Col. Geo. W. Haines, superintendent of the Brunswick and Western Railroad, Dr. Guitéras, Surg. Carter, and Dr. Burford, we went out and selected such camp near Waynesville, 25 miles northwest of Brunswick—the most salubrious location convenient to railroads in that region. Upon our return to Brunswick the third case of known yellow fever, that of the Cox child, was discovered. Immediately, on the nature of the case being made known, and before isolation could be perfected, the mother fled with the child  $5\frac{1}{2}$  miles into the country. Surg. Carter pursued, captured, isolated, and placed guard over them late that evening. This case developed over a mile northwest from either the Branham or Harris case, and tended strongly to confirm the growing opinion that the city was infected independently of the Branham case. I therefore issued an order to the railroad officials prohibiting them from carrying any passengers or baggage out of Brunswick for any point south of Atlanta until further orders from the Government. The mail steamer for South Brunswick and St. Simons Island was prohibited from landing at those points, mails to be delivered by small boats. Inspectors at Jesup, Way Cross, and South Brunswick were instructed to inspect all trains, passengers, and freight arriving at those points from Brunswick, or points between Brunswick and Jesup, Way Cross, etc., and see that no persons or baggage from Brunswick, and points between Brunswick, Jesup, etc., were allowed to proceed beyond the inspection stations in any direction unless they had certificates, tickets, and baggage checks for Atlanta or north of Atlanta. This order was as stringent as it was possible to make it, and was rigidly enforced. My reason for including in the restriction people in the country near Brunswick was that it was full of refugees from Brunswick. Some hundreds of Brunswick people had taken refuge at and near Waynesville, and a week

after the issuance of the restrictive order I had Dr. Guit ras visit Waynesville and make a house-to-house inspection, with the result of finding all the people in good health. After the order had been in force ten days I began to issue pratique to all those people who had been out of Brunswick ten days or more.

The construction of the camp near Waynesville had been placed in charge of Col. Geo. W. Haines, superintendent of the Brunswick and Western Railroad, and Civil Engineer Fitzsimons, with instructions to push the work with all possible dispatch. In ten days eleven buildings, depot and platform, railroad siding, kitchen, two dining rooms, commissary, guardhouse, quartermaster's building, headquarters, telegraph office, hospital, and medical attendants' quarters were completed, with shingle roofs, windows, panel doors, and dressed flooring; grounds cleaned up of trees and d bris, six driven wells put down, furnishing an ample supply of good water; a number of portable water-closets constructed; one hundred 12 by 14 feet tent floors built, and ten dining tables, 3½ by 20 feet, completed. Under Surg. Carter's supervision a baggage car had been lined, made steam tight, fitted with racks, steam pipes, connected with a powerful locomotive, steam supplied the compartments through 1½-inch pipes at a pressure of 165 pounds, with the result that a thermometer inserted through the chimney vent on top of the baggage car registered 101° C. in four minutes, a result eminently satisfactory to Surg. Carter and myself; more so from the fact that in my report on Camp Perry, in 1888, I had recommended as strongly as possible the construction of steam disinfecting cars, stocking them with nonperishable camp equipage, etc., and stationing them at points accessible to places liable to yellow fever, thus having the appliances at hand for immediate action. As it is, officers detailed to handle people and places developing yellow fever are obliged to exercise their wits in utilizing the best means at hand, which, though crude, under the genius of such an inventive mind as that of Surg. Carter prove effective. Before the buildings of the camp were completed you had shipped and delivered to us 200 wall tents, 12 by 14 feet, 1,000 blankets, 500 wire mattresses, cots, Winchester rifles, 200 pillows, 500 sheets and pillowcases, etc. Passed Assistant Surg. Magruder had purchased ranges, kitchen and table furniture and ware, so that by September 2 the camp was so far completed that the railroad construction force was dismissed, the camp being in condition for immediate use, if necessary, immensely superior to Camp Perry in 1888, it being our object to avoid the severe criticisms cast upon Camp Perry during the first month of its occupancy.

But with the case of the Cox child, discovered August 23, there seemed to be a total cessation of the fever. We depended upon the reports of the local physicians of suspicious cases. I suggested to the board of health August 26 that a house-to-house inspection be made on the following Monday, but I was assured by the board of health that such action was unnecessary; that it would tend to increase the nervousness of the people remaining in the city; that, in addition to the physicians, all the ministers and members of the relief corps were in touch and reporting all cases of sickness coming under their notice.

I had noticed, however, that while Drs. Hugh and R. E. L. Burford frequently carried Dr. Guit ras to see their cases of sickness, two other physicians were not availing themselves of Dr. Guit ras's or Dr. Faget's services as expert yellow-fever clinicians. I was suspicious of them, so much so that I had Dr. Guit ras and Surg. Carter sound them as to their actions. Guit ras stated that one "reported no cases because he had no cases of any kind to report;" no practice, being out of the city from 3 or 4 p. m. until 9 or 10 o'clock next day. Carter reported he believed the other to be frank in the matter. In Drs. Hugh and R. E. L. Burford I had every confidence possible. Accordingly we waited and watched. No case or suspicious cases being reported from day to day, the outlook seemed favorable for the complete cessation or control of the disease.

On the morning of September 7 I was seized with a violent vertigo, due to the formation of numerous small tumors in the right middle ear, the drum membrane of which had been destroyed in the battle of Shiloh, April 7, 1862. The vertigo recurred at frequent intervals, the initial symptoms of which would be an explosion in the head, followed by excessive giddiness and nausea, vomiting, etc.

On the evening of September 7 Dr. Guitéras telegraphed you, "Since the case of the Cox child there have been no cases of yellow fever in Brunswick. I have finished to-day an examination of cases of fever at present existing and none are suspicious." In which opinion all of us, with the best information obtainable, concurred. As full fifteen days had elapsed since the development of the case of the Cox child, who had immediately been removed to the country several miles and had recovered there, upon recommendation of September 7, you authorized the removal of the quarantine on the 8th.

On the 10th September, my sickness completely unfitting me for any duty, you kindly ordered me sent home in care of Dr. Faget. Surg. Carter had been ordered to Washington September 1st, and Passed Assistant Surg. Magruder to take command of relief of the storm sufferers on the sea islands on South Carolina and Georgia coasts, thus leaving Dr. Guitéras temporarily in charge of affairs in Brunswick.

Thus far our efforts to control the infection at Brunswick had been carried out under strict military ethics. It was attacked *in situ* with all the best destructive means at our command except annihilation of the city. At the same time, in view of the possibility of our efforts proving futile, arrangements were made to place the city in a state of siege and starve it out.

The preparations for future contingencies were continued for the reasons stated in my report of August 27, viz: "I hope it is under control, but anyone who has seen the vagaries of the fever will not hazard his reputation by prognosticating anything about it, as it has two or three months yet to exhibit its unaccountable actions."

Yellow fever is a disease propagated by the implantation of morbid matter, the nature of which is as yet unknown, in places where heat, moisture, and filth abound. Once the yellow-fever poison is implanted in places having these three factors, its growth, naturally slow, is accelerated or retarded in proportion to the amount of filth present. Brunswick was in a fairly good sanitary condition, hence the slow development of the poison there. My observations of the "vagaries" of yellow-fever poison for twenty-eight years past has been that it requires from two to six weeks, sometimes more, for it to manifest itself with sufficient power to be pronounced epidemic. Again, when the yellow-fever poison is once implanted in places having the three foregoing factors I know of no instance where it has been "stamped out."

It will "run its course" of three to four months or until heavy frosts have prevailed in the infected places. It is essentially a disease of crowded communities. It can not be propagated 5 miles distant from infected towns or communities. If any cases occur outside of towns or cities it is because such cases have been infected in crowded communities. As I have said, the three factors for the propagation of the yellow-fever poison are "heat, moisture, and filth." By filth I mean human and animal excreta and matter. Decaying vegetable matter, the cause of malarial fever in its protean forms, plays no part in the propagation of yellow fever. Hence, twenty years ago, in my "inaugural thesis," with yellow fever as my subject, I took the ground that if our Southern cities were put in such sanitary condition as to thoroughly remove and destroy all animal matter from their midst epidemics would be unknown. Time has confirmed that opinion. Indeed, so strong has it become that I would not hesitate to implant the yellow-fever poison in our northern cities, or Memphis, which has several times been devastated



by yellow fever, without fear of its becoming epidemic. Therefore, while I regretted it very much, I was not surprised, within twenty-four hours after my arrival home, and full twenty days after the discovery of the Cox case, that Dr. Guitéras should report a death in the practice of one of the two physicians above mentioned the cause of which had been certified to as "consumption," but who found the "consumptive" to be a well-nourished youth, whose skin was as yellow as a lemon, etc.

As I have stated heretofore, in examining and tabulating the mortuary records of Brunswick, Dr. Guitéras had arrived at the conclusion that yellow fever had existed in that city for a month or more before the discovery of the Branham case. This brings us to the question as to how the yellow-fever poison entered Brunswick, and incidentally as to whether Assistant Surg. Branham, the first known and acknowledged case, contracted the fever at the quarantine or in the city. If Dr. Branham had confined himself to the quarantine station, or if the mistake had not been made of bringing a man violently ill, with all the initial symptoms of yellow fever, directly into the heart of the city, the problem would be easy, but Dr. Branham stopped in the city a few days before taking command of the quarantine station, and during the ten days or two weeks he was in command of the quarantine station he visited the city several times, spending the larger portion of the day there. During the short time Dr. Branham was in command of the station it does not appear that he had any vessels to handle from the yellow-fever zone or infected ports. If such was the case, I may say that I have yet to learn of a quarantine station anywhere ever being infected with yellow-fever poison due to the absence of the third factor—filth. Notwithstanding the fact that the quarantine regulations promulgated last March and concurred in by the health and quarantine authorities of the Southern States and cities, it is susceptible of proof that the management of the Brunswick quarantine station was absolutely inefficient.

The quarantine physician visited the station only when a vessel arrived in port, boarded, inspected, and directed the disinfection of vessels requiring it, in his opinion, and returned to the city and engaged in private practice until again called by telephone to inspect another vessel; thus leaving such important work as disinfecting vessels from the yellow-fever zone to ignorant employés. For I insist that if an infected or suspected vessel is not made absolutely mechanically clean and disinfected to the fullest extent and power from galley to keel and then held in quarantine for sufficient time *after* the work is fully completed to demonstrate that none of the people aboard the vessel or the quarantine employés have been infected in the act of disinfecting such vessel, the work will be a delusion and a snare. Better bedone not at all, for then people reposing trust in such ineffective work will be on their guard and know what to do. Now, the records at Brunswick show that between May 1 and July 1, 1893, fifteen vessels arrived at that port requiring by the regulations disinfection; of these, eleven received insufficient detention, i. e., five days, including, I understand, the time required for unballasting and presumable disinfection. Of the eleven vessels five were from Havana, some of which had ballast of street débris from Havana. The most notable example of the utter inefficiency of the Brunswick quarantine is shown in the case of the *Anita Berwind*, Capt. Biddle, from Havana. This vessel came to the quarantine wharf for disinfection about 3.30 p. m. June 15, and was cleared and proceeded up the Satilla River early on the morning of June 19, 1893. Capt. Biddle stopped at the Ocean House, Brunswick, from the morning of June 17 to June 19, 1893. He was quite sick with fever on the 17th; on the 19th he proceeded up the Satilla River to Conquest's Camp, where he died of yellow fever six days thereafter. Did Capt. Biddle have yellow fever while at the Ocean House? I believe so. I have known instances where the initial symp-

toms of yellow fever simulated those of intermittent fever, i. e., a complete remission of the fever, and then, twelve to twenty-four hours thereafter renewed exacerbation. In my own attack, in October, 1873, my initial chill, headache, etc., came on late Saturday night, with complete remission Sunday and Sunday night, and I did not "give up" till noon Monday. This is an exception to the rule.

It is susceptible of proof that a number of the other fifteen vessels above alluded to had equally short detentions.

Again, it is stated that some of the laundry work of the Brunswick quarantine employes was constantly sent to the city to be laundered.

Such, briefly, are the facts regarding the management of the Brunswick quarantine immediately prior to the late epidemic in that city, and I use the strong terms applied thereto advisedly, and with this condition of affairs going on there of what avail is it if the National Quarantine Stations, or other local quarantines, are conducted with all the vigilance and skill of such eminent sanitarians as Rutherford, of Texas; Holt, Jones, and Wilkinson, of Louisiana; Cochran and Scales, of Alabama; Porter, of Florida; Brunner, of Savannah, and Horlbeck, of Charleston. Their links in the chain may be forged of Harveyized steel, but the link at Brunswick has not even the strength of a rope of sand. "The strength of a chain is only equal to that of the weakest link," is an axiom that obtains here.

The foregoing facts tend strongly to confirm the opinion of Sanitary Inspector Guitéras, derived from a critical examination of the mortuary records of Brunswick, that yellow fever existed in that city prior to the case of Assistant Surg. Branham, and negatives the opinion that he became infected at the quarantine station. After his arrival at Brunswick, and after tabulating the mortuary records of Brunswick for several years past, Dr. Guitéras asserted that he had suspicions that the yellow fever had existed in Brunswick for some weeks prior to the Branham case. He was emphatic, however, in maintaining that the yellow fever prevailed in Brunswick in October, 1890, which was kept concealed, and without any special effort I ascertained the following facts in the matter:

About September 1, a Norwegian captain and wife came up from St. Simons Island for a health certificate to enable them to go North. They informed me that they had sailed in the yellow fever zone fifteen years, and had seen yellow fever. That in October, 1890, they were in Brunswick, and were both seriously sick with fever, which they told the attending physician they were certain was yellow fever, but the physician discredited it. Mr. Nightingale, a citizen of Brunswick, told me he lost two daughters from fever in October, 1890, which he was satisfied was yellow fever, but the physician pronounced it hemorrhagic malarial fever.

At the time you and I were in Waycross, Ga., October last, Col. Geo. W. Haines sent for me, after you and I had called upon him, on an important matter. He then informed me that, what I did not probably know, was that yellow fever was very prevalent in Brunswick in the fall of 1890. That Dr. Butts, his railroad surgeon, told him that yellow fever was almost epidemic there, and "if the Lord did not send a frost soon it would be impossible for them longer to conceal it."

This condition of sanitary affairs at Brunswick for several years past is probably due in a measure to indifference born of long exemption from yellow fever, but mainly to commercial rivalry. Brunswick is excessively jealous of the commercial importance of Savannah. They fear Savannah is endeavoring to secure the cotton, lumber, and naval-stores trade of Brunswick—hence Brunswick has placed as little strictures on vessels as possible, even to unballasting and disinfecting vessels from Havana, with street débris as ballast, within twenty-four hours.

The best remedy for this lax work is for the General Government to appoint one or more inspectors, endowed with "firmness of purpose, devotion to duty,

and common sense," characteristics which Surg. Carter states are the necessary qualifications for a good quarantine officer, and have every national and local quarantine thoroughly inspected and investigated by them every thirty or sixty days during the quarantine season, with full authority to instantly remedy any defects or dereliction of duty in the premises.

As to how the yellow fever reached Jesup I do not know, nor am I familiar with the management of the yellow fever at Brunswick and Jesup after I was relieved September 10. This properly belongs to Surg. Murray, Surg. Carter, and Passed Assistant Surg. Geddings.

In closing this report I can not but express my highest esteem and appreciation of the services of Dr. John Guitéras, Dr. Chas. Faget, Surg. Carter, Passed Assistant Surgs. Magruder and Geddings. Taken altogether I doubt if it would be possible to get together a similar corps combining a more scientific or practical knowledge of and management of yellow fever. The thanks and esteem of the corps is also due the Surgeon General of the Marine-Hospital Service for his prompt action in taking in hand the matter of preventing the spread of the yellow fever from Brunswick, and approval of the means taken by the corps in carrying it out.

Respectfully submitted.

W. H. H. HUTTON,

*Surgeon Marine-Hospital Service.*

SUPERVISING SURGEON-GENERAL U. S. MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

REPORT OF SURG. R. D. MURRAY ON THE MANAGEMENT OF THE YELLOW-FEVER EPIDEMIC IN BRUNSWICK, GA.; LOCAL RELIEF FURNISHED, AND CAUSE OF THE INTRODUCTION OF THE DISEASE.

SIR: I have the honor to state that in obedience to your telegram of September 14, 1893, received at Key West Quarantine, Tortugas, Fla., about midnight of the 15th, I left Tortugas at 5.30 a. m., September 16, and arrived at Detention Camp, Waynesville, at 1 p. m., September 18, and at Brunswick at 3 p. m. of the same day.

I found the camp, under command of Passed Assistant Surg. Geddings, about ready for beneficiaries. The able and prompt superintendence of Mr. Fitzsimmons, of the Brunswick and Western Railroad, resulting in such quick completion of the camp deserves especial commendation. It was decided to open the camp at once, and on the 19th 120 persons were admitted.

At Brunswick I found a variety of opinions prevalent. Some determined to never admit the prevailing disease to be yellow fever, many forced to give up their preconceptions in face of Dr. Guitéras' overwhelming proofs which had been submitted the two days before and on the point of his departure, and many confident that yellow fever did exist, but distressed that the active and earnest measures for stamping out had not succeeded.

But in spite of the variety of opinions and worry as to the outcome I was welcomed and soon discovered that there was a sufficient number of hopeful and determined persons who could be relied on to fight to a finish in the public interest and in saving human lives whether exposed in Brunswick or safe without the limits.

My first duty was to approve the stationing of land guards by Passed Assistant Surg. Geddings and Sheriff W. H. Berrie on the 18th, that morning. A rapid survey showed that there were 20 known cases under treatment scattered all over the town and that any effort to stamp out would be futile. I soon became convinced that cases had existed for over a month in various localities and that



fomites were so generally distributed as to utterly banish all hope of a prompt cessation of the disease until frost came.

To many it seemed that to wait for frost would kill every nonimmune and ruin Brunswick if not exhaust every person who had any work to perform, but I saw no other hope. Misinformed as to earliest time of earliest frosts, I named a six-weeks' siege as the most favorable outlook. Had I said ten weeks I would have been a prophet.

During my first evening I inspected the city hospital, the Marine Hospital, and the unfinished Episcopal Hospital, and carefully considered the chances for a place at which to treat patients who might be homeless or prefer to go to a hospital rather than remain at home. Much urging was resorted to for me to complete the large brick building designed as an Episcopal Church hospital. After due estimating I had to decide against the project, as it would require at least \$5,000 and two weeks' time to get ready for a single patient and then work would have to be continued for a month or more. I could not agree that use of public money for private improvements would in the end be sustained by your office; decided to use the city hospital, a run-down affair of four small, detached cottages for indigent colored patients and the Marine Hospital for whites. The owner of the latter objecting to such use, the project was abandoned. This made little difference in the end, as it would have been impossible to get many to go to a hospital at all; subsequently about a dozen were admitted to the city hospital. I have been criticised for not establishing a hospital promptly, but do not feel hurt over it; and were my service to be repeated under same conditions, I would not establish one. The subsequent employment of sufficient physicians and nurses gave aid to practically every needful case in which there was a possibility of transfer to hospital.

After dusk of my first day I was called on by the board of health and prominent citizens, and during the conference a general plan of work and relief was agreed upon. A census was the first necessity. The chaos in other matters was present in the estimates as to how many souls were in the town.

Somehow the colored population had been forgotten, although at the time many were sick with yellow fever. The census, completed three days later, showed a total number of 5,230 persons of all ages in Brunswick proper—600 white males, 570 white females; total white, 1,170; 1,633 colored males, 2,428 colored females; total colored, 4,060. Of this number, 238 were reported as having suffered with yellow fever in 1876 or in Florida in 1888, or at other times. Evidently the actual number of immunes was greater, as in 1876 about every person in the village suffered an attack of fever of greater or lesser severity. A total of 40 persons were reported sick, of whom 24 were known to be sick with yellow fever. The census of Pelicanville, consisting of 35 white and 59 colored, is excluded from above. The population of Pelicanville was subsequently increased from Brunswick by 60 stevedores, who were transferred by the detention camp to load cotton and phosphate at the Terminal docks, and by some families from the country who had not communicated with Brunswick at all. The population of Brunswick was diminished by about 400 people who went to camp. This number was made up by persons who were compelled to come in from the country, and another addition was made by persons returning from St. Simons Island, generally on permits given by me. The increase in population was not equal to our fears and was immaterial.

The normal population of Brunswick is about 9,000. Of the 5,230 people, at least 4,500 were on the verge of needing relief; in fact some were receiving contributions at the time. A resident and enforced population at St. Simons Island, south end, distinct from the mills, of about 700 and of about 2,000 scattered in country houses, some resident, most refugees, made the number that might need relief about 8,000.

The procurement of these figures instead of appalling anyone simply defined our work and gave courage. The greater number of colored over white seemed to astonish everyone but me, and for a moment gave rise to senseless rumors and apprehensions of riot, violence, and other troubles. As soon as I could I appointed two colored physicians, with pay and free medicines, to look after all fever cases among the colored people, and four of the best colored men I could learn of to act as sanitary inspectors, whose duty it was to carefully seek out all persons needing aid of any sort and to act in such case as was advisable. The wisdom of this action was fully shown in a few days, resulting in quieting all fears and in relieving possible distress and misery.

#### CORDON AND GUARDS.

The land-guard posts, selected by Sheriff Berrie the forenoon of the 18th of September, were continued, except that slight changes were made as experience seemed to justify. Land-guard post No. 1 was at end of boulevard on the east; No. 2, on Darien road, near convict camp; No. 3, near old church on Waynesville road; No. 4, at Six-Mile Railroad Crossing on Waynesville road; No. 5, at Altamaha Canal bridge, or Four-Mile Railroad Crossing on Crispin Island road; No. 6, south of Pelicanville on railroad, to protect Pelicanville and Crispin Island road; No. 12, October 1, north of Pelicanville, to protect against persons going around and coming in from north side.

No. 14. On October 20 I found it necessary to place a guard on a blind lumber road in the woods between Darien and Waynesville roads, to prevent persons from returning too soon. This guard returned several buggies and carts.

No. 7, September 19. Water guard at Buzzards Roost, to prevent persons going up Turtle River.

No. 8, September 19. Water guard at Brandy Point, to prevent persons from going up or down Turtle River to St. Simons, Jekyl or St. Andrews Sound.

No. 9. On September 20 a station was established at Jekyl Pass, consisting of one schooner and three small boats, with seven men under the efficient charge of Capt. B. W. Fahm. This station guarded all the outlets to Florida and to Camden County on the south. During the night the small boats were placed at the mouths of three small creeks; in daytime guarding could be done from the schooner.

No. 10, September 24. Water guard in Back River to cut off chances to get to St. Simons or to the northeast from the rear of Brunswick.

No. 11, September 26. A water guard was placed at Academy Creek, which runs into Turtle River northwest of Brunswick, to intercept persons who might seek to leave Brunswick by way of the Altamaha Canal.

No. 13. On October 9 a water-guard station was made above Manhead Point toward the north end of St. Simons Island, to prevent persons from escaping from the island toward Savannah. This was thought to be useless, as there was apparently no desire on the part of any St. Simons Mills people to make their condition worse. The land-guard posts consisted of 3 men each, all of whom were required to be on duty at night. One was permitted to be absent during a part of the day. They were paid \$2 per day, subsisting themselves. Inspections were frequently made by me or Sheriff Berrie and I am proud to record that the duties were well performed.

The posts were 4 miles or more from Brunswick, including a sufficient area to keep me from the charge of cooping up people. The posts were supplied with tents by me. The water-guard stations, except No. 9 at Jekyl Pass, which had 7 men, consisted of 3 men each, who furnished their own boats, arms, and provisions, and received \$2.50 per day. The water duty was vexing, difficult, and at times dangerous; but the duties were always done on honor in spite of weather.

During the hard storm of October 12, all suffered much, and two boats were cap-sized, the guards losing their arms, food, and clothing. One boat was never recovered.

#### PASSES AND RESTRICTIONS.

Gentlemanly, orderly, and business communication was freely permitted. Persons were allowed to come into Brunswick after 9 a. m., and required to leave before 3 p. m., for transaction of actual and necessary business. No person dare say the principles of visitation were not well known to him. In no instance did disaster follow the simple adherence to my wishes, and were I to conduct a cordon every year I would ever permit just what I did permit this season. The land and water guards kept records of all persons passing in and refused to permit them to return any day after without a pass from me. All guards permitted people to pass out on business errands who held passes written by me. Every pass was taken up on first presentation and subsequently returned to my office. Thus country produce could come, fish, beef, horses, milk, hay, and feed could be procured, and articles absolutely needed on islands and in the country were obtained with scarcely an idea in the minds of the people that all were under surveillance. No favors were shown to anyone. No passes were given for fun or comfort. Business or distress were the only pleas that obtained the coveted slips. Issuing passes took much of my time; but it was best for me alone to issue them, as then I was responsible for any untoward incident. I know there are many who object to my course in giving passes and allowing daylight decent communication, but I will wager the objectors have never been within a guard line as a part of the people, and have a poor idea of the multitude of various wants and needs of a community.

The water guards were removed by November 16, several stations earlier to save expenses, and as few people wished to return to Brunswick by water. All land guards were removed on November 30, although the fever had not entirely subsided. But the weather was inclement. I was admitting about all who asked permission and the risk of careful persons taking the fever was next to nothing.

I have no reason to regret the early removal of the guards in any instance. I now wish I had removed all on November 25, the date of first frost at Brunswick, as but two cases were officially reported after that date. It was possible for persons walking, or in skiffs at high tide, to get out of Brunswick, but impossible for buggies or wagons, or large boat. The element of danger to any person trying to get out prevented efforts to do so except in a few instances from which no harm came.

The principles embodied in the Treasury Department circular of August 18, and the behests of your letter of September 28, 1893, in regard to illicit and too frequent communication were carried out to the utmost of my ability. The primary fear that when free food would be furnished in Brunswick the country people would rush in in hordes was not realized in fact, as the chance to send in for supplies met all needs. In no instance did a case of yellow fever arise outside of the Brunswick cordon after the guards were set on September 18, except at Detention Camp, where there were two. It is conclusively shown that the Island, Jesup and upcountry cases occurred from communication prior to September 17, when the disease was declared epidemic in Brunswick.

#### DETENTION CAMP.

The site of Detention Camp was chosen by Surg. Hutton after careful consideration of healthfulness, proper distance, and convenience, and was begun about August 22.

The nonoccurrence of fever cases at Brunswick during latter part of August and 1st of September caused the raising of all restrictions and temporarily a suspension of work on the permanent buildings. However, within two days from





Office.      Telegraph office.      Commissary.      Dining rooms and kitchen.  
DETENTION CAMP, NEAR WAYNESVILLE, GA.









DETENTION CAMP, NEAR WAYNESVILLE, GA., SEPTEMBER 21, 1893.

Elevation 55 feet above mean low water.

the declaration of the epidemic the camp was opened and received 120 detainees. It is located on high ground  $1\frac{1}{2}$  miles south of Waynesville, Ga., 23 miles from Brunswick, and consists of permanent kitchens and dining rooms, commissary, executive offices, telegraph office, linen room, guardhouse, etc., arranged around a square. The tents, with planed board floors, were arranged in rows around three sides of the square. The hospital, consisting of double ward, kitchen, and officer's quarters, is a half mile distant, the ground being cleared off for placing of tents for extra patients.

The Refugee Camp is adjacent to the Detention Camp, but separated by a guard beat and a natural growth of woods and underbrush, which was not removed. There was accommodation for 400 detainees and 200 refugees. From the opening of the camp to November 24 (the latest report I have), 505 detainees were accommodated and 18 returning refugees. This number includes 60 stevedores who were passed for Pelicanville to load steamers at the East Tennessee docks, and several persons who were subsequently employed in the camp; also some who were refugees from the beginning, not having means to "move on." Of the number passing through camp out from Brunswick 36 were immunes; several of these passed on with one day's detention prior to October 6, when the permission to pass immunes was rescinded.

After the occurrence of frost at Jesup and at places higher up, some immunes were passed through on previous permission given by the health authorities of the points to which they were bound.

About 30 discharged sailors from vessels arriving at Brunswick were passed through, it being considered criminal to permit them to lodge in the infected town. The two cases of yellow fever were in this class, the men having deserted from the camp train and spent nights in Brunswick after having been given tickets for passage to camp. It will be understood by those who know anything of the return-voyaged sailor that these men gave more trouble than a vastly greater number of any other kind of human beings. Six persons were admitted from Jesup, who, however, were not Jesup citizens. The highest number of employes at one time was 64, the lowest was 5. Employed persons, cooks, waiters, guards, etc., were taken in and discharged as occasion demanded.

The Brunswick and Western Railroad furnished a train of engine, baggage car, and coach, with crew, for \$80 per day, which ordinarily made two trips daily to Brunswick and return. When a large quantity of articles required disinfection but one trip was made, as the engine was needed to supply steam to steam car. Trips were not made on Sundays except in emergency.

The officer in command of camp was authorized to admit persons who made the trip by private conveyance or came in from the surrounding country, but those who left Brunswick were required to get passes from me which admitted to the train and served as primary record at camp. The pass system was begun to aid the conductor in knowing whom to carry, and prevent parties going on mere pleasure jaunts.

Due and careful measures were adopted and enforced to be certain that all persons who left camp were free from infection in person and luggage; that no one took or conveyed fever after his discharge is evidence that the efforts were successful.

The fumigating of cars with sulphur gas was begun on September 23 and continued till October 28, during which time 680 cars were disinfected and passed. After the date mentioned it was thought advisable to cease, as the colder weather would do more effectual cleansing than the sulphur could. Although the camp seemed at the best place, several malarial cases developed which were attributed to local influences. When the choice was made the whole country was overflowed or sodden with water, which made high ground the first desire. My own choice

would have been at Six-Mile Crossing, where both railroads, the Brunswick and Western, and East Tennessee, Virginia and Georgia, could have been used, and thus Jesup could have been easily accommodated. The lessened cost of train service would have allowed more expense for guards if more had been needed, and the camp would have been resorted to by many more people. The matter of distance is not to be seriously considered, as discipline and care are the only protective means to be relied on.

Much credit is due Passed Assistant Surg. H. D. Geddings for his management of the camp.

#### MAIL.

On September 20 I asked permission to use previously punched envelopes for all letter mail. At Brownsville, in 1882, no mail was started out except first class, and that was placed in envelopes punched with eight holes. The hammer of nails used at Jacksonville and Waynesville made self-sealed holes through the whole letter and envelope, which must have prevented the sulphur gas from coming in contact with the letter itself, which must be the dangerous agent, if there is any, in a letter mail. The plan in use tears and defaces the contents, and in case of important letters or checks, does unnecessary damage. The post-office at Brunswick kept punched envelopes on sale during the quarantine. Merchants and others soon adopt the plan of keeping a supply. A conductor's punch is handy for a small number, but a set punch is better, as a half package can be perforated at one stroke. I do not believe, however, that letter mail will convey the infection unless some effort is made by the sender to specially infect it.

#### LOCAL RELIEF.

On my arrival there were 20 cases of yellow fever under treatment. On the 21st of September, when the census was completed, there were 24 cases of yellow fever out of a total of 40 sick persons.

The physicians in the city were Sanitary Inspector C. Faget, M. D., Dr. Hugh Burford, Dr. J. A. Dunwoody, Dr. R. Hazelhurst, Dr. J. A. Butts, Dr. C. A. Blair, Dr. E. V. West, and Dr. H. R. Davis. Sanitary Inspector R. E. L. Burford, M. D., was at quarantine station within call. These constituted a sufficient force to deal with many more cases than existed. Thus there was no need to call for more physicians, although it was plainly to be seen that the necessity would soon arise, as the immunity of 5 of the above named was not assured. Subsequently 3 of them suffered with the fever. There being at least 500 white immunes and a greater number of colored, and it being my desire to give all possible relief, I decided to depend for nursing on the local talent, thus saving cost of transportation and placing the wages where they would do the most good. My apparent indecision in this matter caused some comment, but the event proved the correctness of my judgment. I was not positive at first as to my authority for assuming charge of the medical relief, but could not believe my duties only included guards and restrictions. The harassing doubts and uncertainties for five or six weeks had about exhausted the patience and pluck of everyone. It seemed best that I take full charge of affairs relating to sickness by fever. Some arguments were used in favor of my controlling the issue of rations, but my prejudices were against the General Government ever giving the people food relief. Supplies were coming in from a liberal public and considerable money had been received. Up to September 23 \$3,379 had been put in the hands of the organized relief committee. If I had taken charge of the distribution of food it would have been only fair and proper for me to disburse the money; then, in a short time, when the fact was known that a Government official was in charge of the food and clothing relief, the contributions from the people would have ceased altogether and the



entire sustentation of the city would have devolved upon the Government. I was at all times ready to prevent actual starvation by direct aid, but could not propose to anticipate by establishing a commissary and a relief bureau so long as my faith in the generosity of my people held out.

During the season of eleven weeks the relief committee received over \$32,000 in money, besides ample supplies of provisions; in fact, there was a surplus of staple articles of food to be disposed of after the siege was over. The churches received contributions, some of which were not turned over to the general relief committee. The societies, Odd Fellows, Knights of Pythias, Masons, firemen, etc., all received more or less, which was in the main disbursed by the respective society. Thus it will be apparent whether it was, or was not, good policy for the Government to give full relief to a community. It was not in this instance necessary.

The relief committee very wisely, and I think for the first time in the history of epidemic charity, on the 1st of November, at least five weeks before we expected the end, gave out in an able note that contributions might cease from that time. This fact, if no other, shows the desire of that body to ask for no more than enough to carry Brunswick over the existing distress.

The relief committee sought to aid the medical relief by filling requisitions for food and delicacies for the sick by means of the following form:

BRUNSWICK, GA., ———, 1893.

To J. W. SMITH,

*Commissary Agent:*

Please furnish ———, No. ——— street, with the following:  
 ——— dry catawba; ——— brandy; ——— sherry; ——— port; ——— John-  
 son's fluid beef; ——— Wyeth's meat juice; ——— corn starch; ——— crackers;  
 ——— tea; ——— milk; ——— oat meal (Quaker); ——— eggs; ——— sugar;  
 ——— champagne.

—————, M. D.

It would have been more satisfactory to all parties if all the articles enumerated in the blank and other articles sent for distribution had been issued in accord with physicians' orders, but it was not possible to dissociate favoritism and "personal knowledges" from actual needs in all cases. However, the desire of the relief committee was to give all relief possible, and I am confident that the Brunswick relief committee more fully filled the place to which men are called in times of distress than has been done before.

I soon found that there was much sickness and distress among the colored people; the poorer always suffer first and most in panics and pestilence. During my first week I appointed the two colored physicians and four prominent colored men to serve this class. This action forestalled any chance of strife or riot, the reports of which were utterly false and unwarranted.

On October 6, Drs. Wall, of Tampa, Fla., and Booth, of Shreveport, La., having arrived, I, in accordance with your telegram, placed all the local physicians on pay, directed that all medicines should be paid for by me, and assumed payment of the nurses.

On October 13 Dr. J. C. Legare, of Donaldsonville, La., arrived and tendered his services free of charge, except carriage hire. The relief committee had inconsiderately begun to pay nurses a higher price than I deemed proper. We were striving to relieve the suffering and prevent starvation among those not sick. It was not advisable to lay the foundation of a fortune or a paying business in any case.

The prescriptions were filled at three drug stores. There was no time to start a dispensary, and for the short period one was not advisable. Although the medicine bill was comparatively large—about \$4 per patient—there was no waste, no

delay, no substitution. The great number of malarial cases throughout the city and region compelled me to make no distinction at the drug stores between character of fevers.

Thus the medicines paid for include much for diseases other than the epidemic fever. In this I had my own precedents, and their practice is warranted, provided medicines for chronic diseases and other diseases in those able to pay shall be paid for by recipients.

Nurses were required to be asked for by the attending physician on the accompanying form:

ORDER FOR NURSE.

Date, \_\_\_\_\_.  
 Patient, \_\_\_\_\_.  
 Address, \_\_\_\_\_.  
 Sex, \_\_\_\_\_.  
 Color, \_\_\_\_\_.  
 Sex of nurse, \_\_\_\_\_.  
 Remarks, \_\_\_\_\_.  
 \_\_\_\_\_, M. D.

They were not to be of near kin, and were to receive \$1.50 for twelve hours' duty. It is a pleasure to state that the duties were, with rare exceptions, well performed, and I feel confident that the comparatively small sums disbursed through the nurses to the town did much more to relieve attendant distresses than if a host of foreign nurses at high prices had been imported. It was rare that a patient was not nursed by a friend or acquaintance and that satisfaction was not given. Steward Cragg and Mr. O. V. Barkuloo conducted the nurse bureau with great skill and dispatch. In all, 83 male nurses and 161 female nurses were employed. These numbers do not include nurses paid by the relief committee prior to October 6. Of course it is to be appreciated that many patients did not need a hired nurse, and that in some instances, malarial patients had them. The second, third, and fourth weeks in October comprised the trying period with the physicians. I had recalled Dr. R. E. L. Burford from quarantine only to have him sicken, thus losing two weeks of his valuable service. Drs. Blair and West sickened and were off duty about fifteen days each. The former got a famous newspaper notice and the latter had a very narrow escape. Excepting Dr. Dunwoody and myself, at some time every physician was off duty, some for longer time, others for a day or so. Unfortunately the fatal illness of Dr. Wall's wife called him home on October 29. Drs. Faget and Booth remained till the middle of November brought no work for them. Dr. Legare remained till the close.

The total number of recorded cases of yellow fever in Brunswick and suburbs within the guard lines from August 12 to December 11 was 1,072, deaths 46. White males 200, deaths 25; white females 153, deaths 10; total white 353, deaths 35; percentage, 9.9. Colored males 319, deaths 5; colored females 398, deaths 5; total colored 717, deaths 10; percentage, 1.35. Mongolian males 2, deaths 1. The list of cases has been carefully revised, in order to exclude duplications and relapses.

The occurrence of sickness in the physicians necessitating visits by others and the failure of parties to state that they had already received attendance caused some confusion.

The list of deaths contains four from the practice of one physician who refused to report any case of yellow fever, although he had previous experience and a large clientele. From it is taken the cases in which necropsies clearly showed the cause of death to be other than yellow fever. Fifteen necropsies were made in Brunswick, 7 in yellow fever cases, 7 in malarial fever cases, and 1 in a case of rheumatism.

The list of cases shows the following to be the number reported by each physician. That a greater number is, with two exceptions, claimed to have been treated is due to the taking up of cases previously treated by another, which had to occur in case of illness or absence of a physician, and in some cases of dissatisfaction with the first medical attendant.

*Cases reported as yellow fever.*

|                     |    |                                |     |
|---------------------|----|--------------------------------|-----|
| J. A. Dunwoody..... | 94 | R. E. L. Burford.....          | 79  |
| J. A. Butts.....    | 98 | C. A. Blair.....               | 120 |
| R. Hazelhurst.....  | 39 | A. R. Booth.....               | 139 |
| E. V. West.....     | 50 | J. P. Wall.....                | 166 |
| C. Faget.....       | 83 | R. D. Murray.....              | 23  |
| J. C. Legare.....   | 73 | Unknown and miscellaneous..... | 34  |
| H. Burford.....     | 74 |                                |     |

The prevalence of malarial disease was well appreciated by all after care was used in diagnostication. Dr. Hazelhurst reported 28 malarial cases, Dr. Blair 163, and others in a similar proportion. An accurate record of such cases could not be kept, but there is good reason to believe that quite a thousand cases of malarial fever were treated, some occurring in those who before or after had yellow fever, some in immunes, and to my knowledge in several who did not suffer with the epidemic and conveyable affection. But it will not serve to deny the existence of yellow fever because of the existence of malarial disorders such as intermittent, remittent, hæmoglobinuria, cachexia, etc. Neither will it do to doubt the existence of a quarantinable disease because all of southeast Georgia was suffering with an inordinate share of malarial poison. The yellow-fever cases were of the same type and nature as those on shipboard, where, in most instances, the element of malaria is absent.

The occurrence of yellow fever in a malarious locality, or especially bad season, gives much more anxiety to and requires much more care in diagnosis and treatment of cases from a conscientious physician than the care of cases under other conditions. To treat a case of one disease when suffering from the other may not make much difference in some circumstances, but in yellow fever it does make a vast difference in every way, and it is provoking to have a patient burn up with malaria while only antipyretics are used, or die of congestion when convalescing from yellow fever.

In all cases when a death occurred the used bedding that could not be washed was burned and paid for, if any value, and the house fumigated with sulphur.

POST EPIDEMIC DISINFECTION.

Beginning on November 25 and continuing, except on rainy days, till December 12, with a large force of men and sufficient teams, all the bedding, carpets, etc., from houses in which fever had been reported were carried to the steam car, which had been used at the detention camp, and subjected to steam of a temperature not less than 220° F. Thus 560 houses were forced to have the probable fomites rendered harmless, if not by the process of disinfection, by effectual airing. It was not thought necessary or practicable to use bichloride or sulphur in the houses, as the weather was cool and the habitants could not be turned out for sufficient time. Experience has shown the uselessness of any general method of disinfection during the progress of an epidemic; a good frost or a hard blow will clean up a town more certainly than sulphur can, and if attention be given to the bedding after a frost all has been done worth considering. Frost had occurred at Brunswick on the night of November 23, with ice at Jesup. Up the country 20 miles and more from the sea it had occurred before. Events showed that the frost of October 30 had



practically freed Jesup from the pest. The cold weather higher up the country caused the refugees to need the winter clothing left in the hurried departure from Brunswick in the hottest weather and convinced them that if cold at Macon or Atlanta it must be cold enough on the seashore. The consequent pressure on me for permission to return after November 15 was greater than from the desire to get out in the face of danger. A newspaper jocularly and truthfully stated "now the fun begins." I fancy it is easier to keep a people in than out. Urging and reasoning worked with some, but many rushed home in spite of persuasion and surveillance. The guards now had to fall outward, as it were, and prevent an invasion. I gave many permits on conditions for heads of households to return to air their dwellings and prepare for the reception of their families. Finally I succumbed to the common desire, and on Thanksgiving Day removed the last guard, to the joy and relief of all concerned.

Fortunately but one case arose among those who entered the city after removal of the guards. He had little or no treatment, and died on December 11 with a report of congestion of the brain. As he was a sailor deserting from Savannah, it was not certain that my guards could have kept him out, he being consigned to a sailor's boarding house. A close watch was kept by all physicians who had been trusted during the epidemic for cases after December 1, but none was discovered; the continuance of malarial fever during December and the occurrence of epidemic influenza gave rise to many close contests in diagnosis, but I believe all acted honestly and were not influenced, as in the summer, by the fear that spoken truth would forever ruin the prospects of the town.

It is easier to decide on a case of yellow fever and to report it after one is used to doing so and after frost than in midsummer when one will "hurt the town," and receive, in any case, a multitude of not very choice epithets and a few curses.

#### INTRODUCTION OF YELLOW FEVER.

The introduction of yellow fever which has puzzled many intelligent men for many months, and the ignorance of which has given rise to much strife is like many other things very simple when you know. The quarantine is located in the southern end of the marsh, 3 miles south of the city limits. Begun nineteen years ago, the stone and other ballast discharged have made an irregular island of about 3 acres in extent. Rock, chiefly granite, has been placed at the water's edge, and behind same sand and rubbish has been thrown until the island is raised to a proper height for a wharf, say 5 feet above highest tides. Spurs of rock are run out at different points so that earth and sand can be thrown into the water and the marsh. The primal notion was to make land to be used as a loading and discharging wharf, and thus the ballast was a matter of ulterior importance at least. A ballast company, consisting of residents of the city, furnished hoisting engines and controlled the discharge, receiving payment for use of the hoisters and the privilege of discharging. The city was given a small portion of ballast receipts as a proof that no idea was entertained of doing wrong or making overcharges. A quarantine for revenue to private individuals.

#### INTRODUCTION.

The quarantine officer lived in the city and visited vessels and the station on call, never remaining there after his duties were performed. A local force of 2 to 4 men was kept at the island while vessels were undergoing treatment, which consisted of ballast discharge, salt-water and bichloride washing, and pot fumigation.

A requisite of the city board of health was that all earth and sand must be put under water, but as that body was not making islands it was not aware that they asked for more than could be done. It was known to some persons that once in a

while a crew of colored men would go to quarantine to discharge ballast. The idea was not a good one, but as for years no trouble had resulted, no action was taken, and many never knew of the method. In fact, I was in charge of the station for three months before I appreciated the matter and the risks that had occasionally been run in the past. As a rule Spanish vessels hire ballast crews, as the sailors refuse to do hard work in the sun. As a rule Spanish vessels come from Cuba, but it was expected that all such should first go to the United States quarantine at Sapelo, 30 miles distant.

The trouble in Brunswick arose from breaking the regulation as to rubbish ballast and the rule as to Cuban vessels going first to Sapelo.

The first case of yellow fever to occur in Brunswick was in Capt. A. J. Biddle, of the American bark *Anita Berwind*. The vessel left Havana June 10, cleared 9th, and arrived at Brunswick quarantine June 15; was fumigated and released on June 17. Capt. Biddle came to Brunswick June 17 to charter his vessel; stopped in Ocean Hotel until morning of June 19. Was taken sick night of 17th or morning of 18th, and was urged to let his vessel obey charter by going up Satilla River and remain in Brunswick till he got better. He persisted in going off, and died near Conquest's Landing, 50 miles up the river, on the 25th of June. The cook subsequently sickened. Surg. Carter, Dr. Dunwoody, and Dr. Brunner united in doing everything to avert a disaster, and I think fully succeeded. But the warning was not heeded at the quarantine. It is rare that a man set off from his fellows to smell out and ward off pests has any warning as to what his conduct should be. He must be hard and fast in discipline of self and others and alert all the time to succeed for a term of years in keeping up the record of "no harm done" which will be set for him by ordinary course of commerce of ninety-five out of every one hundred vessels.

The Spanish bark *Maria*, "a dirty vessel," arrived from Havana June 16, with sand and earth ballast. Had a ballast crew of 7 colored men, who left when ballast was out. Entered at custom-house July 1.

The American brig *H. H. Wright*, with 40 tons stone ballast, arrived from Havana on June 22 and entered at custom-house June 26. No ballast put out. Some hints have been given as to this vessel, but I can find no proofs.

Spanish bark *Felo*, "a dirty old hulk," with 180 tons sand from Cienfuegos, an infected port, arrived July 17, 12 in crew. A ballast crew of 7 colored men was procured to discharge the vessel, who left when the duty was done, the vessel remaining for washing and fumigation. Vessel released July 29 and entered custom-house July 31. The mate of this vessel suffered with fever at quarantine; was seen twice by the quarantine physician; was weak when the vessel reached wharf at Brunswick. When able he traversed the city at night, as did several of the crew. It has been claimed that Assistant Surg. Branham laid on the same bed at quarantine which had been used at times by the mate, but there is a better cause for Dr. Branham's fever, which is the same as that of the mate, i. e., the ballast. This ballast evidently infected the mate; it could not be put under the water.

Dr. Branham was at the quarantine continuously from July 31 till August 7. He, in desperation for exercise, if for nothing else, walked over the rock spit on which this Cienfuegos ballast was thrown, and, like the mate, was infected.

The Spanish bark *Galofre*, with sand and earth ballast from Havana, and 13 men, arrived on July 22. A ballast crew of 7 colored men discharged her and returned to the city. The vessel was being washed down when Surg. Carter and Assistant Surg. Branham arrived at the station. Dr. Branham took a drink of water on board. Thus far water has not been charged with carrying yellow fever. The vessel was released on August 4 by Dr. Branham. The *Galofre* did no harm to Dr. Branham, but her ballast, powerless to infect one of a thousand immunes, could

infect him whether he was suffering with Staten Island malaria or not. Dr. Branham slept in Brunswick the nights of August 7 and 8, returning to station in daytime. It has been thought that he might have caught the fever in Brunswick. I think it safer to believe that he got it from part of the filth of Cienfuegos and Havana transferred as it was to Brunswick.

What of the 21 colored men who left the quarantine in clothes dirty and grimy with Cuban earth? They were of Brunswick and distributed about the town. No record has been kept of them. My days of leisure in Brunswick were days of illness, and I could not hunt evidences when ill.

It was evident to me, from my first acquaintance with Brunswick that somehow the colored people were suffering with yellow fever, and I believe that through them, and not through Dr. Branham, the disease was introduced and generally disseminated as early as August 5. That no deaths gave a hint of conditions does not disprove my surmise, for colored people rarely die of yellow fever, and often need no medical aid in it.

I do not understand that it is my province to report on the service actions prior to September 18, as that belongs to Surgs. Hutton and Carter and Prof. Guiteras, but it is well to note that about the middle of August the disease began to affect white people, 6 cases occurring, including Dr. Branham's, up to the 26th. The terrible storm of August 27 and 28 came in as a diluting force and, in my opinion, delayed the outbreak for two or three weeks following. I have known of wind action mitigating the epidemic force and progress, and in the tropics that is the only natural force depended on.

It is not fair to assume that the physicians who visited Dr. Branham distributed the poison about the town, as no case occurred in their homes or lodgings until long after the city was admittedly infected.

Johnson, the tailor, died September 18, and Killian, the shoemaker, died September 14, both of Newcastle street. Both being dead, it is not possible to discover if either or both did any work for sailors or ballast crew men from the Spanish vessels. The presumption is they did not. They worked in the infected region, which will be described. The commonest resort for colored men and sailors is a dance hall on Oglethorpe street, near Monk. In this region are a number of saloons which keep late hours in spite of city ordinances. Along Bay street, from Gloucester, south, are also many saloons, and from Monk street down to the lower end dozens of men, sailors, stevedores, roughs, and women used to mingle, jostle, and parade from sundown till past midnight.

A quadrilateral, bounded north by Gloucester, east by Richmond, south by Manchester, and west by Day street, including Oglethorpe and Grant streets, north and south, and Monk cross street, seemed to be the poisonous area. Of the 45 white, 10 colored, and 1 Mongol deaths 16 whites either worked or lived in this region; 2 were policemen, whose duties kept them in it much of the time. Of the 10 colored deaths 4 lived in the region. The Chinaman lived and worked in it. Thus 22 of the 46 deaths may be attributed to the infected region. An analysis of all the earlier cases will show similar results.

There were other deaths at later dates on some streets extended and in other parts of the city. It is evident to me that the Cox child, the third known case, was infected by her immune father, who was a trash gatherer on Newcastle.

I have the honor to remain, very respectfully, yours,

R. D. MURRAY,

*Surgeon, Marine-Hospital Service.*

SUPERVISING SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*



REPORT OF SURG. R. D. MURRAY ON THE YELLOW FEVER AT JESUP, GA.,  
AND SOUTH END OF ST. SIMONS ISLAND, AND UPON COMMERCE AND LABOR  
DURING THE PERIOD OF THE EPIDEMIC.

SIR: In addition to my letter of October 10, 1893, in regard to Jesup, hereto attached—

REPORT OF INVESTIGATION OF YELLOW FEVER AT JESUP.

BRUNSWICK, GA., *October 10, 1893.*

SIR: I have the honor to report that on receipt of Marine-Hospital Bureau telegram of September 30, and the notice that a special train would be sent for me from Jesup, I left the bedside of a dying girl at 1 a. m., October 1, and, riding 4 miles in the dark and dew, I took the train, reaching Jesup at 3 a. m. Mayor Steele, Drs. Tuten and Little, and other citizens met me with a tacit welcome. It soon appeared that Dr. Tuten had insisted that Warren had died with yellow fever, and had thus offended the mayor, Drs. Eason, Drandy, and the majority of the people.

Listening to the story of Drs. Tuten and Little, I was inclined to consider the case one of yellow fever, and only wished a sample of urine. Proceeding in the dark toward the house, we were warned that Mr. Warren's father would shoot at us if we approached the house. At this moment Dr. Eason came up and volunteered to procure the urine. He failing, got permission for me to try. The urine being albuminous, I decided the case to be yellow fever. To this Drs. Drandy and Eason and the mayor, with many others, bitterly objected. Dr. Eason's history of the case only convinced me more, but in answer to the mayor's queries and to what post-mortem conditions would swerve my opinions, I told him what would, and also what six points would be found, viz, bloodless body, shrunken liver, of the color of cane of chair; empty gall bladder, small dark-blue spleen, red, bloodless kidneys, and a half gallon of black vomit in stomach and bowels.

So the mayor, deceived by my assurance, ordered the autopsy, which was performed at early daylight. My foretelling was truthful. The five doctors, including Dr. Samuel (who had disputed me), concurred. I ordered a prompt burial and fumigation of the house and returned to Brunswick, as the wretched state of the people and animosity to Drs. Tuten and Little would utterly prevent a general outlook. Dr. Drandy went to bed with a probable relapse from yellow fever; Dr. Eason left at once for Dales Mills. On Tuesday I returned on a hired special and found, as reported, six cases, all now under Dr. Tuten's care.

\* \* \* \* \*

I learned that the fever had been in Jesup at least as early as September 6, and the town had four known recoveries, viz: Rowland, telegraph operator, whose wife and sister-in-law are ill; Robert Cole, the baggage master, and Drs. Drandy and Little. Sources of contagion are not known, except in case of Dr. Little, who contracted it from an early Brunswick refugee's child early in September or last week of August.

As reported, I placed guards on October 3, putting Mayor Steele in charge. At the time I did not know of Dr. Little's immunity, or I would have placed him in charge.

On October 4 I took a nurse to Jesup to serve the Grey sisters, and am now glad I exercised the forethought.

Mrs. Ogden, the second death, was frightened by discovering the presence of the gate guard at 10.30 a. m. and died at 3 a. m., after apparently complete convalescence.

As reported to you, the town of Jesup has 609 inhabitants—280 whites, 329 colored—of whom but 15 or 20 are possible immunes.

Warren's contact is in doubt. I do not expect to find that Warren contracted the disease in Brunswick or directly from here. \* \* \*

Prescriptions will be filled at Dr. Tuten's drug store by a competent pharmacist.

To-day I sent another female nurse; to-morrow will send two male nurses to care for Drs. Tuten and Samuel.

Very respectfully, your obedient servant,

R. D. MURRAY,

*Surgeon, Marine-Hospital Service.*

I have further to report the following :

Careful inquiry has shown that a case of yellow fever occurred on August 16, 1893, at 223 South Cochran avenue, Brunswick. Dr. John Guit ras saw the case on August 19, but would not positively decide. Since then, as the same person suffered an attack of malarial fever in Detention Camp on September 30, he has had all doubts removed and concludes that the case was yellow fever. The girl removed to 407 D street on August 21, where she remained until September 21. The persons owning the house left Brunswick on August 21 for Odessa, where they took conveyance for Harpers, 6 miles distant. On the way out, Maud, age 6 years, became seriously ill, in due course black vomit occurred and she got up very weak. The grandmother, who had her suspicions about the former case, treated her in her way for yellow fever, as she had done in the case of the young lady on August 16. Dr. Little, of Jesup, rode out the 12 miles, on August 23, to see the child; remained at house several hours, taking dinner. He again visited on the 25th. The child recovered, and no other case occurred in the two families, consisting of nonimmune, 2 adults, and 8 children and 3 immune adults.

Dr. Little was taken ill the night of August 27—the night of the hurricane—and remained ill with fever for three days; he got up very weak; had to return to bed for a day.

Dr. Tuten had his suspicions, as he knew of the visit to the child in the country. Subsequently, through contact with Dr. Little, Rowland, telegraph operator, and Cole, baggage master, were taken ill on September 6. I have seen all three and consider them immunes.

The sister-in-law of the young lady left Brunswick on August 22, and stopped at Gardi. She was visited by Dr. Drandy on August 24, and perhaps subsequently. Dr. Drandy fell sick on September 2, and when I saw him October 1 he presented signs of having suffered with yellow fever; subsequently he was prostrated for three weeks, perhaps due to the exertion the night of September 30, and the attendant contention and excitement.

The lady at Gardi recovered, gave the disease to no other, and went to Savannah about September 4. She was afterwards sent out of Savannah to serve a term in quarantine.

Thus the fever was introduced into Jesup, and it is not necessary to waste time trying to prove that Charles Warren visited Brunswick at any date in September. I have a fair idea of Warren's movements during all of September and until Wednesday, September 27, when he returned from Screven to die three days later, and Brunswick is not included in them. I have tried to discover other sources of infection during September, but, thanks to Major Steele's rigid surveillance of Brunswick refugees, none can be traced.

The strife, ill feeling, and terror excited by Warren's death made it useless for me to try to carefully inspect the town on October 1. The people would not go to camp then. To go 38 miles south, and then back 20 miles, waiting for the camp train in the woods, was a rough outlook. Many were going to the country at once, and would have gone in spite of any number of guards. It was better to give them

a day to disperse as suited them than to interfere and get the worst of the effort. I earnestly advised all to remain at home and be isolated; to go to the camp on the 3d, when I would return with a train. Many took the first hint; none the second.

On the 3d Mayor Steele and Marshal Milliken surrounded the town with guards, in accordance with my instructions and a detailed plan, and the success was remarkable. One guard deserted; one white man, aided by a privileged person, escaped; three negroes crawled out through a swamp we thought impassable, but were all caught and returned. The chase for the white man resulted in his getting well up into the country, where he was harmless. Of the refugees from Jesup one, Leggett, had the fever near Hazelhurst, but recovered without conveying the disease to any other.

The experiences at Gardi, Odessa, Jesup, and Hazelhurst sustain the old-time impression that yellow fever does not spread in the piney woods. Dr. F. T. Lincoln arrived the night of October 3, and had general charge of treatment of patients and of the guards. Mayor James Steele had immediate charge of the guards and patrol, and performed his duties in an admirable and confidence-producing manner. At one time it was thought it would become necessary to call for relief from the public. I preferred rather than do so to ask permission from your office to issue rations to the actually needy, but the mayor and city council decided to start necessary labor on the streets, for which the city funds could be used, and thus the plucky little town avoided the notoriety of having called for outside aid from any source.

In as far as was needful medicines and nurses were provided by me at public charge. The income from the guards and patrols aided materially in relieving distress among the 609 people who were hemmed in by the cordon. Evidently Drs. Little and Drandy suffered with the fever the last of August and first of September. Dr. Tuten sickened October 7, and recovered after a mild attack. Dr. Samuel, sanitary inspector, sickened on the 9th, recovering after running the gamut of bad incidents—remarkable, considering his age, 50 years. There were 39 cases recorded; the first August 27, the last November 20: White males, 16; white females, 15; colored males, 5; colored females, 3. Three deaths: Warren, white male, 25 years old; Mrs. Ogden, white female, 38 years old, and Mr. Gray, white male, 52 years.

I desired to remove the guards at Jesup on November 1, thinking the frost of October 30 and 31 would insure safety. No cases occurred after the 28th day of October till November 15, when the sheriff returned from the country and moved into the jail. His wife and two children sickened and were treated by Surg. Carter. In spite of this incident I do not think any harm could have followed the removal of the guards. Surg. Carter disinfected the town thoroughly by steaming clothing, bedding, etc., on November 11 and 12, and subsequently by long exposure to air. I made frequent visits to Jesup during October, and one November 23, to pay the October guards and nurses. My gratitude is due Mayor Steele, Dr. Lincoln, Mr. Rumph, and others, for courtesies.

The number of persons employed at Jesup was: Physician, 1; nurses, 10; guards, 42; patrols, 7; census taker, 1; a total of 61. Patrols furnishing a horse received \$2.50 per day; guards furnishing their own arms and subsistence received \$1.50 per day.

All bedding destroyed to prevent infection was paid for to the satisfaction of the persons concerned.

#### SOUTH END ST. SIMONS ISLAND.

There are several settlements on St. Simons Island; the hotel and cottages on extreme south end; ocean pier about a mile north on east side of island; St.



Simons Mills about 4 miles north of ocean pier, and Jewtown and Kings back from both the Mills and pier.

The first case on extreme south end occurred in a lady who was last in Brunswick on September 11. She passed six times through the infected district, and spent several hours in getting apparel from her city residence; she sickened on September 20, and after a wonderful struggle, recovered. Her brother sickened on September 24, and died with a typical case on October 6. He was last in Brunswick on September 13, but was in constant attendance on his sister. One other case occurred in the nearest cottage, a total of 6 cases. Another center was at Ocean Pier, resulting in 16 cases and no deaths.

Dr. H. M. Branham served this people with great zeal. On October 9, to secure St. Simons Mills, where sawing lumber and loading vessels were continued throughout the season, with a population of about 500, I ran a guard line across the island to cut off the south end.

On the 10th a lady died at Dr. McCaskill's with suspicious symptoms. During the hurricane of October 12, at great risk, I went over to make an examination if possible. The exposure I suffered during the night and the soaked ground deterred me from disinterring the body, but I discharged the land guard, set a guard near Mewhead Point toward the north end of the island, and left Dr. McCaskill in charge. A total of 15 cases and 1 death were recorded, as at this point there was no exodus of frightened people from St. Simons.

I requested the church and other gatherings to cease for a month, and arranged to prevent effectually the purchase of liquors, which gave unusual quiet to the center of the island for about 6 weeks and perhaps prevented a further spread of the disease.

#### COMMERCE AND LABOR.

As has been noted, the sprightly town of Jesup instituted public work with the city funds and thus avoided an appeal for relief.

The medical relief given to Jesup was in suppression of the epidemic; the guards were placed for the security and comfort of other places.

I begged the Brunswick relief committee to have public work done and pay for it out of the relief money. There were sufficient chances for the work and had the many idle and anxious laborers had short hours and moderate pay the whole city would have been permanently benefited and the same relief would have been given with fewer reasons for grumbling. It was my policy in employing guards and other help to give places to persons, equal in other respects, who most needed employment.

The shipping commerce of the port was ruined or nearly so by the breaking of the three banks in May and June. The depression of financial panic was worse in effect on the town than the fever. The two fever panics caused most of the shipping agents to either go to safety or hold up business for the season.

One of my first acts was to have the East Tennessee docks, at Pelicanville, 4 miles from Brunswick, protected by guards. In due time loading of large steamers with cotton and phosphate was begun and continued without mishap or alarm, resulting in the disbursement for labor of \$22,000.50, which may, without much stretch of imagination, be considered as a contribution to the community.

The marine quarantine was continued with all the care which the Marine-Hospital Service gives to such matters.

I feared the crews of incoming vessels would add to our number of cases. To avoid this I set a guard on every vessel that came to the city wharves. Ties and lumber constitute the exports. The stevedores were required to keep from close contact with the crews; only the masters and stewards were permitted to go ashore in the daytime and no visitors were permitted on board. By this means no cases

occurred on any one of the many vessels which loaded. The city received the profits of the shipments and loading and a small contribution from pay of guards. It is in nowise true that the epidemic or the relief measures injured Brunswick's commerce. Doubt and fear did delay business in a measure, but the chief agent was the financial condition of the town.

The six or seven cases of yellow fever among seamen occurred in persons who were in the city before the cordon was put on or those who deserted after being put in the camp train, except the last case and last death.

Loading at St. Simons Mills continued throughout the season without material interruption.

I have reason to congratulate myself on the measures adopted to keep up the shipping interests, and that no vessel became infected. Fortunately petty violations of my rules and some grumbling led to no evil result.

The following are the numbers of persons employed within the Brunswick cordon, with rate of pay in each case:

|                        |        |                              |        |
|------------------------|--------|------------------------------|--------|
| Sanitary inspectors, 2 | \$5.00 | Messenger, 1                 | \$1.00 |
| Sanitary inspectors, 2 | 1.50   | Assistant superintendent of  |        |
| Land guards, 1         | 3.00   | nurses, 1                    | 2.50   |
| Land guards, 27        | 2.00   | Fumigators, 2                | 3.00   |
| Water guards, 1        | 7.50   | Fumigators, 19               | 2.00   |
| Water guards, 6        | 2.00   | Teamsters, 7                 | 2.00   |
| Water guards, 1        | 1.00   | Nurses, 240                  | 1.50   |
| Water guards, 26       | 2.50   | Nurses, 4                    | 5.00   |
| St. Simons guards, 1   | 2.00   | Physicians, 3                | 8.00   |
| St. Simons guards, 10  | 1.50   | Physicians, 10               | 6.00   |
| Ship guards, 38        | 1.50   | Physicians, cost of buggy, 1 | 2.50   |
| Census takers, 14      | 2.50   |                              |        |

A total of 421 persons.

No person was paid for time when not actively employed.

Very respectfully,

R. D. MURRAY,

*Surgeon Marine-Hospital Service.*

SUPERVISING SURGEON-GENERAL MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

#### TABULATION OF CASES AND DEATHS FROM YELLOW FEVER IN BRUNSWICK AND VICINITY.

SIR: I have the honor to refer to Bureau letter requesting a tabulation of yellow-fever cases and deaths at Brunswick and vicinity during 1893. Continued illness has prevented me from responding sooner. Some delay is chargeable to physicians who have failed to send me corrected reports. This table may be changed somewhat for good reasons. The Brunswick board of health report would be 57 deaths, including 3 from islands. I exclude 8, 7 of which were due to malarial fever and 1 of rheumatism, as proven by my post-mortem examinations.

I am, very respectfully, your obedient servant,

R. D. MURRAY, *Surgeon M. H. S.*

SUPERVISING SURGEON-GENERAL U. S. MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

*Yellow fever at Brunswick in 1893.*

| Places.           | Cases during— |       |      |      |      | Deaths during— |       |      |      |      |
|-------------------|---------------|-------|------|------|------|----------------|-------|------|------|------|
|                   | Aug.          | Sept. | Oct. | Nov. | Dec. | Aug.           | Sept. | Oct. | Nov. | Dec. |
| Brunswick         | 6             | 119   | 771  | 179  | 1    | 2              | 7     | 30   | 6    | 1    |
| Jekyl Island      | 0             | 2     | 11   | 0    | 0    | 0              | 0     | 1    | 0    | 0    |
| St. Simons Island | 0             | 7     | 15   | 0    | 0    | 0              | 0     | 1    | 0    | 0    |
| St. Simons Mills  | 0             | 5     | 9    | 0    | 0    | 0              | 0     | 1    | 0    | 0    |
| Detention Camp    | 0             | 0     | 1    | 1    | 0    | 0              | 0     | 0    | 1    | 0    |
| Jesup             | 1             | 8     | 27   | 3    | 0    | 0              | 1     | 2    | 0    | 0    |
| Hazelhurst        | 0             | 0     | 1    | 0    | 0    | 0              | 0     | 0    | 0    | 0    |

Fort Valley, 1 case recovered in August, Dr. H. M. Branham.

Gardi, 1 case recovered in August, Miss Maud Curry.

Odessa, 1 case recovered in August, Miss Mary Casey.

Atlanta, 2 cases recovered in September, Feiberman and Rotholz.

Longstreet, 1 case recovered in September, J. R. Mason.

Marietta, 1 case recovered in September, Collins.

REPORT OF PASSED ASSISTANT SURG. H. D. GEDDINGS, IN COMMAND OF DETENTION CAMP, NEAR WAYNESVILLE, GA.

SIR: I have the honor to present the following report of the operations of the Detention Camp, near Waynesville, Ga.

The camp was officially opened for the reception of refugees from Brunswick, Ga., on the 18th of September, 1893, and closed by the order of Surg. R. D. Murray, Marine-Hospital Service, permitting the return of all refugees to their homes in Brunswick, Ga., November 30, 1893. Four hundred and thirty-one persons availed themselves of the privileges of the camp, of whom about 225 were white and the remainder black and colored. The site of the camp, selected by Surg. W. H. H. Hutton, was 23 miles west of Brunswick, immediately upon and on the south side of the Brunswick and Western Railway, and upon an eminence about 25 feet above the general level of the surrounding country, which is generally swampy, and within a mile of the margin of what is locally known as the Buffalo Swamp. As is usual in this section, the elevation was covered with a dense growth of yellow pine, scrub oak and black gum trees. The soil was a gray sandy loam, overlying a stratum of yellow clay, and the natural drainage of the site in all directions was good.

On my arrival I found that under direction of Surg. Hutton an area 200 feet square had been cleared of trees and undergrowth, and at the four angles of this square rough but substantial buildings had been erected, which were used respectively as kitchen, white and colored dining rooms, guardroom, quartermaster's storeroom, executive office and telegraph office, and commissary. A depot and baggage room were provided at the railway. Along the line connecting the buildings, at intervals of 12 feet, were placed wall tents, 12 by 14 feet, with flies, and subsequently further rows of tents were pitched behind these and opening in streets 14 feet wide. All tents were provided with substantial floors, raised 6 inches above the ground, and the following equipment was provided:

For each inmate 1 spring wire bottomed cot, 1 cotton mattress, 1 hair pillow, 2 sheets, 1 pillowcase, and for each tent, 2 tin washbowls, 2 tin cups, and 2 wooden chairs. Remarkable ingenuity was displayed by the inmates in construction of articles of furniture from packing cases, waste lumber, etc. The tents proved of good quality in service and quite comfortable in all weather. It is suggested, however, that any future tents be constructed with a wall, 18 inches or 2 feet higher, and of 1 foot greater pitch. A hospital establishment of two buildings was provided at a distance of one-half mile from the camp.



The following routine was observed, the calls being given by the bugle: 5:30 a. m., reveille and attendants' breakfast; 6 a. m., breakfast; 8 a. m., sick call; 12 m., dinner; 4 p. m., sick call; 5 p. m., supper; sunset, retreat, and call to quarters; 9 p. m., tattoo; 9:15 p. m., taps (extinguish lights).

The meals were substantial, abundant, and as varied as possible. In all cases women and children were served at the first table, and the races were served in separate dining rooms. The following rules were announced, and seemed to work well in practice:

1. At reveille all inmates will rise and prepare for breakfast.
2. All quarters must be clean, floors swept, and beds made up before first sick call.
3. Meals will be served in the dining rooms only, and at stated hours, and no meals shall be carried from the dining room to any quarters, except upon the written order of the medical officer, renewed from day to day.
4. At sick calls all inmates will repair to their quarters, and be there visited and inspected by the medical officer, who will prescribe and advise as he deems best.
5. All suspicious cases of disease shall be isolated at once and until such time as their nature may be determined.
6. All cases of infectious disease will be treated only in the hospital provided for the purpose.
7. No baggage from infected localities shall be brought into camp until disinfected by such process as may be directed, and only such wearing apparel as may be deemed absolutely necessary will be brought into camp after the disinfecting process.
8. All wearing apparel shall be a second time disinfected before discharge from camp.
9. Any person taken ill between the two sick calls shall notify the nearest guard, who will in turn immediately notify the medical officer.
10. Guards are enjoined by their vigilance to prevent the commission of any nuisance near any quarters; should such nuisance be discovered, the inmates of the nearest quarters will be required to police the same under the supervision of the guard, who will make report of the fact.
11. Inmates will confine themselves to the inner lines of the camp after retreat (sunset) call.
12. While innocent enjoyment will be encouraged, the strictest propriety of conduct will be demanded and enforced.

The discipline of the camp was in the main good throughout. But two confinements for misbehavior were required during the entire duration of the camp.

All baggage was submitted to steam disinfection upon arrival at and departure from camp. The apparatus used was devised by Surg. H. R. Carter, Marine-Hospital Service, and constructed in a baggage car, the steam being supplied by a locomotive.

In addition to other duties, nearly 1,600 cars, boxes and flats, were disinfected for the Brunswick and Western Railway, sulphur fumigation being used for boxes and drenching with acid solution of bichloride of mercury (1-800) for flat cars. This disinfection of cars enabled the traffic into Brunswick to be carried on with a minimum of delay and hardship.

Two cases of yellow fever occurred among the inmates of the camp. One resulted in recovery; one in death. Both cases occurred in the persons of sailors who had arrived in Brunswick on vessels trading there, and both would seem to show a period of incubation of at least five days, thus justifying our detention of ten days.

## RECOMMENDATIONS.

Experience having shown certain things to be desirable, I would respectfully recommend—

1. That a disinfecting car be built and kept equipped for service in epidemics. The 9-foot chamber, built by the Kensington Engine Works, of Philadelphia, for this service, could be easily erected on a specially constructed car, and would prove more efficient in practice than extemporized apparatus. Another car might be fitted with apparatus for sulphur and bichloride of mercury disinfection, and a tank car, similar to those used for transporting petroleum, would complete a train that would be always ready for emergencies in any part of the country. Steam could be supplied if desired by a locomotive hired for the purpose.

2. That while experience has demonstrated the usefulness of tents, those provided in the future should be higher in the pitch and in the wall, and that some provision be made for heating them in severe weather. It is a question in my mind whether the Sibley conical tent, made with a higher wall, would not be preferable on this account to the square tent.

3. That in future epidemics of yellow fever apparatus should be provided and observations made into temperature, temperature maximum and minimum, barometric pressure, dew-point, direction and velocity of wind, precipitation, and ozone.

4. That apparatus, instruments, and reagents be provided for investigation into the etiology of yellow fever in future epidemics.

Very respectfully,

H. D. GEDDINGS,

*P. A. Surgeon, Marine-Hospital Service.*

SUPERVISING SURGEON-GENERAL U. S. MARINE-HOSPITAL SERVICE,

*Washington, D. C.*

REPORT OF SURG. H. R. CARTER ON TRAIN-INSPECTION SERVICE AND SANITARY WORK OUTSIDE OF THE INFECTED PLACES DURING THE YELLOW-FEVER EPIDEMIC OF 1893 AT BRUNSWICK, GA.

SIR: In obedience to verbal orders of October 4, 1893, to take charge of the sanitary work outside of the infected places, I left Washington that day en route to Waynesville, Ga. I stopped in Savannah part of October 5 at the invitation of the sanitary council of that city to confer with them and to learn what measures they had taken for the protection of that place. Thence I proceeded to the camp near Waynesville and met Surg. Murray, and then to Waycross. Waycross, from its position, was chosen as headquarters, but it was rather a place through which I frequently passed than one at which any considerable portion of my time was spent.

The condition of things was as follows: At every place I visited grave apprehension was felt at the continued spread of the fever, and from what I heard this feeling was general over southeast Georgia.

All incorporated towns had taken measures to prevent the introduction within their limits of those who had been exposed to infection.

In some these measures were well conceived and carefully carried out; in others the combination of earnestness and inefficiency was almost pathetic. And the sanitary condition at this time was by no means reassuring. Jesup and the Jesup refugees were the key to the situation. Brunswick was fairly depopulated and well under guard, and from Brunswick there seemed a minimum of risk. The fugitives from Jesup, leaving from October 1 to 3, were scattered to the number of some hundreds in the neighboring country. As fever was reported to have existed at Jesup for some weeks before it was announced, and as six cases were reported there on the 3d, with a white population of only 550, the apprehension

was that the place was fairly well infected, and that there would be some development of the disease among these refugees. Many of these people had gone into the country, and were living with friends or by themselves in isolated farmhouses. But Jesup being essentially a railroad town, a large number had naturally gone or were attempting to go to the stations or towns on the lines of the railways leading out of Jesup, where they had acquaintances who would assist them in getting work, etc.

These places were, many of them, low and swampy and nearly all were or had been the site of sawmills, and from previous experience the old sawdust piles were judged peculiarly favorable to the spread of yellow fever. Also, it was believed that these railroad people would ultimately attempt to make their way into the large cities.

From those who had gone into the country but little danger was apprehended, as fever developing among them could probably be successfully isolated. The establishment of other foci of infection on the line of the railroad, however, would have greatly complicated the situation and added to the danger by the flight of their floating population, who would naturally seek the most accessible town.

It seemed imperative then to (1) prevent those who had presumably been exposed to infection stopping at places on the line of the railroad, at least within the territory believed liable to infection; (2) to keep all such people under sanitary supervision and if fever developed among them to take such measures as were necessary and possible to prevent its spread.

For the first, a man well acquainted with the Jesup people visited every railroad station between Jacksonville and Savannah, and up the Brunswick and Western and the East Tennessee, Virginia and Georgia for a long distance to find out at which ones these people were staying or expected to come. I followed him up and moved all such people off the line of the railroad back into the country. It was understood by the railroad officials, and they had so agreed, that trains would not stop at stations at which "suspects" were residing. In most instances the threat of this, with a reasonable amount of persuasion and argument, sufficed to accomplish the end had in view, and in the few instances in which it was enforced a state of public feeling among the neighbors was produced which resulted in the prompt removal of the refugees and a resumption of the business of the community.

This work was difficult and delicate. It seemed absolutely necessary for the good of the community, and yet it was desired to cause the least possible individual hardship. Fortunately, as soon as the need for this action was appreciated, the residents at many of the railroad stations which I had not had time to visit, forbade suspects to come or remain amongst them, and the work of freeing the railroads from refugees was practically accomplished. Frequent inspections were made to see that they kept free.

The inspection of the groups scattered in the country was, in the main, easily carried out. They were "located" by various means and visited when possible. They seemed very willing to report any sickness among themselves, which willingness was fully shared by their neighbors. Indeed, the health of the Jesup refugees seemed a matter of public interest in their neighborhoods, and news of illness among them generally reached me from many sources simultaneously, and as soon as the mails of the locality and my uncertain movements would allow. The knowledge of the location of nearly all of the Jesup refugees, and to a considerable extent, of the Brunswick refugees, who were in southeast Georgia, was of great assistance in investigating reports of suspicious cases, which at one time were very common.

In the very beginning (October 6) with the work described above a general train inspection was organized.



Inspectors had been placed on incoming trains or to meet such trains at the depot by Savannah and, I believe, Macon since September 13 and by all towns in south-east Georgia since the fever was declared in Jesup. In general only the train coming from the direction of the infected district was inspected. The usual method was to stop the train at or near the city limit long enough for the inspector to satisfy himself that the passengers for his town could or could not get off there. Those whom he declined to pass were either put off at this place or carried through the town; their further disposition to be determined by the conductor and themselves. The inspector took no cognizance of such as wished to pass through to points beyond, although they could come back on the next train without inspection, and in some cases are known to have done so. There were many variations in method, however. Way Cross inspected trains entering from all directions, Savannah did the same and made no distinction between those who would remain in that city and those who would pass through. The inspectors of this city also boarded the Savannah, Florida and Western trains coming up through Jesup far down the road, and thus had time to inspect their passengers at leisure without detaining the train. The trains on this road were carefully inspected.

The evidence demanded of a passenger was, in general, the health certificate, i. e., a certificate of residence for not less than ten days in localities not infected with yellow fever, signed by someone authorized to use a seal or by a physician. Occasionally other evidence was accepted, but in general the "health certificate" was required of all passengers stopping in these towns.

This brief account of the inspections of the different towns seems necessary to rightly understand the general inspection service as organized by the U. S. Marine-Hospital Service. This was put on to protect all places on the line of the railroads, unincorporated as well as incorporated. The problem was to make it efficient and to cause as little inconvenience to passengers as possible.

Sanitary inspectors traveled on every train carrying passengers between Way Cross and Savannah, Way Cross and Jacksonville, Way Cross and Waynesville, Way Cross and Tifton, and from Way Cross and Odum to and from Godwinsville, a place on the East Tennessee, Virginia and Georgia Railroad, believed to be sufficiently distant from Jesup. In all fifteen inspectors were employed, and Way Cross was the center of the system. As part of the inspection service sanitary guards were stationed at points of sanitary importance, viz: Dales Mill, Odum, Coal Shute, Doctortown, and Burroughs Station. Also, a couple of tents and the necessary furniture were provided at Way Cross to furnish temporary accommodations to any whom it might be necessary to detain. Savannah had a similar plan at Southover. The inspectors were chosen for their acquaintance with the people of Jesup and Brunswick, with whom they would naturally have to deal, but were residents of the towns which were to be protected, and mainly from Way Cross. They were all men of intelligence, and, after some unsuitable ones were weeded out, were a very efficient body of inspectors. Their work was inspected by Assistant Surg. Nydegger and myself at frequent intervals during the epidemic. In addition each inspector made a daily report in detail—in tabulated form—of his work, which also enabled us to form a fair idea of what he was doing.

The orders of these inspectors were, if possible, to allow no one to board a train in their run without a health certificate, but if one did so board, and the examination of other data presented by him was unsatisfactory, or if the certificate was not satisfactory, to turn him over to the health authority, if such existed, at his destination. If he, with certificate or without, was judged to have been recently exposed to infection, he was to be carried on to the camp at Way Cross; and if on inquiry this opinion was confirmed, he was given the option of returning where he came from or going to the camp at Waynesville.

No suspect was to be allowed to go through Way Cross or beyond the end of the inspector's district.

Much pains was taken to give travelers no unnecessary annoyance, and as the inspectors rode continuously on the train there was no stopping of trains. The service was a difficult one to perform satisfactorily, (1) because some certificates were given without any attempt being made to verify the data certified to, and in some instances with an absolute knowledge of its falsity. I have proof that at one station, which, however, did not lie in the district which we inspected, printed certificates were on sale at a very moderate figure, ready signed, the purchaser filling in his own name. Two persons immediately from the infected places, with certificates correct in every particular, were stopped by my inspectors en route to Way Cross a few days after they began their functions. (2) A number of people, especially at first, who had not been exposed to infection, would, through lack of information or inadvertence, neglect to provide themselves with certificates. Later no one ventured to board without a certificate.

A certificate thus not being proof that a passenger had not been exposed to infection, nor the absence of one a specially suspicious circumstance, the inspectors were to a large extent thrown on their own judgment in examining passengers and the data which the latter could submit to them, and having abundance of time on the train, and becoming quite expert, did, I believe, fairly well.

In spite of what I have said of the worthlessness of certain certificates the inspection service was of much sanitary value, which was not to be measured by the number of people forbidden to proceed. The knowledge that inspectors were on every train prevented the class of people who would have been stopped by them from attempting to travel. They were especially a protection to the smaller places. Commercially they were of even greater utility. The methods in vogue for the municipal inspections involved a delay of the train until the quarantine officer had examined the certificate and other data presented by the passenger. I was on a train which lost by this means fourteen minutes between Jesup and Way Cross. In addition, the time being short, not a few who could have shown that they had not resided in any suspicious locality had time enough been given, would be refused permission to stop and be put to considerable inconvenience.

After our inspectors began their duties their statement to a quarantine officer that a passenger had or had not proper papers was sufficient, and the train passed on, and the passenger if allowed to stop was examined (or not examined) afterwards. Sitting down by passengers and patiently and intelligently examining into the evidence presented, mainly to establish residence, and helping them (generally women) to obtain such evidence by telegraph or otherwise, enabled many to proceed to their destination who would otherwise have been compelled to return home, and occasionally by this means the holder of a fraudulent certificate would be discovered.

At the request of the Florida health officer a certificate of inspection, with a personal description of the passenger, was by our inspectors issued to such passengers as entered Florida, which, it seems, facilitated his work and prevented delay at St. Mary's.

A better service could be organized than we had, but it was of very considerable value. Properly developed it is a valuable agent in land quarantine, and can be used so as to make no disturbance of passenger traffic.

Sanitary guards were placed, as before stated, at certain points on the railroads.

Odum was the point on the East Tennessee, Virginia and Georgia where the transfer was made of cars from Dock Junction, the district between Jesup and Brunswick and points north, the train crew from the south not going beyond Odum.

Coal Shute and Dales Mill were the two termini of the transfer between the East Tennessee, Virginia and Georgia and Savannah, Florida and Western systems, this transfer being made for freight cars by a train crew which lived in Jesup,

and were thus presumably exposed to infection, although some pains were taken to keep them free from it.

These three points, then, were all somewhat exposed to infection, and it was exceedingly important to keep them, above all other places on the road, free from infection, as otherwise they could not be used as places of transfer, and there were no other places which could be so well used. On keeping these points healthy depended the uninterrupted continuation of the business of this road with points east and south.

It was on this account that a guard was placed at each place to see that the transfer was properly conducted, i. e., with a minimum risk of conveying infection. In addition, these places received much personal inspection from Dr. Nydegger and myself. I spent more time at these three places than at any others, not excepting Way Cross, during the epidemic. They were visited by one of us about six times a week. There was less need of a guard at Doctortown, but it was close to Jesup, about 4 miles, and quite a colony of refugees were in the immediate neighborhood who were greatly feared by the few people who lived there. Here was the only bridge over the Altamaha for about 100 miles, and hence sought by people passing up from the country between Jesup and Brunswick, the sanitary history of which was regarded as doubtful. If infected (it was a damp, low place on the bank of the Altamaha) it would have conveyed considerable risk to the country along the river, it being a steamboat terminus and a regular tying-up place for raftsmen en route to Darien. Similar reasons existed for the guard at Burroughs. It was a congregating point for all manner of people coming up the Florida Central and Pacific road, then building, from the country adjacent to Brunswick. These people came on construction trains, etc., to this point, and took trains for Charleston, Augusta, etc., or walked into Savannah.

Almost as soon as Way Cross was reached, indeed within an hour thereafter, another and quite an important duty began to develop, viz, the investigation of cases of sickness reported as yellow fever, or as suspected of being yellow fever. The first of these was in a railroad employé, immediately from Jesup, sick at Johnston Station, a small place on the Savannah, Florida and Western Railroad.

Fortunately the first cases investigated, which had excited much alarm and caused quarantine of the localities, were clearly not yellow fever, and the announcement to the contrary was very acceptable to the residents of the suspected localities. This led to requests to investigate suspicious sickness from the localities in which it occurred, for the purpose of removing suspicion and its consequent inconveniences, as well as from neighboring places which wanted the matter determined for their own protection against infection.

In all, fourteen places where yellow fever, or disease of a suspicious nature, was reported to exist, were investigated, four autopsies made, and only one case of yellow fever found. This was in the person of a Jesup refugee, in the country out from Hazlehurst, who was isolated and the premises disinfected. This man had rented a house in Hazlehurst, a town on the East Tennessee, Virginia and Georgia Railroad, intending to stay there, but was forbidden to do so and moved into the country. Whether the disease would have spread had he developed it in Hazlehurst is, of course, undetermined. The place is not very wet, but has a large sawmill.

Obviously the sanitary value of this work was not great, but it relieved thirteen places from the suspicion of being infected with yellow fever. In five of them the announcement had been definitely made, with the consequent quarantine and disturbance of traffic.

This part of the work involved at times considerable personal labor and some hardships, but as it was generally practicable to combine it with inspection of groups of refugees, and of the work done by the train inspectors and sanitary guards, less time was taken by it than may be imagined.



The section between Jesup and Brunswick and between Waynesville and Brunswick was not considered by me as a part of my territory, and hence I did not investigate cases reported as occurring within those limits. This probably was an error, and I so consider it, but this district had been quarantined against by all the adjoining counties and towns, contained a number of Brunswick refugees, and almost certainly had cases of fever at a number of places, and to treat it as a sort of neutral ground was probably safe practice. At any rate, had fever been announced no difference had been made in the treatment of these places, and had the presence of fever been denied pratique from this district would scarcely have been taken by any town in southeast Georgia, nor would I have felt justified in demanding it. I considered them as under Surg. Murray's immediate supervision.

On November 9 I went to Jesup and began the disinfection of that place. All bedding and fabrics which had been in any house in which yellow fever had been reported were disinfected by steam. The houses, as far as practicable, were thrown open and exposed to the fresh air. The weather, fortunately, was very dry.

Quarantine was raised at Jesup on November 17, after a good frost, there being one case of yellow fever, a returned refugee, in town. The house in which this case was sick was kept under guard and disinfected (the bedding and fabrics) before I left Jesup for Brunswick, November 30, to report to Surg. Murray.

One thing was noteworthy and assisted markedly in such success as was attained in the above-described work. It was the general reasonableness and good faith of those with whom I had to deal. The refugees from Jesup were desirous not to carry infection or even the inconveniences of quarantine to other communities. They were willing to put themselves to certain inconveniences and to forego plans formed rather than impose trouble on others. This was within limits, and only after being convinced of the reasonableness of the restrictions imposed, for a people less amenable to any attempt at arbitrary compulsion I have never seen.

We had also the cooperation of all the local health and civic authorities and railroad officials. The private people in the country were exceedingly friendly, gave information freely, and seemed to appreciate the efforts to limit the extension of the fever and the pains taken to disturb business as little as possible.

In Jesup especially good feeling and hearty cooperation of the whole community were especially marked, and indeed the whole course of this little place, its steadfastness and self-reliance when help could have been had for the asking, is worthy of all commendation.

Very respectfully,

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#### RULES FOR GOVERNMENT OF TRAIN INSPECTORS.

Inspectors will allow no one without a certificate to board a train between Way Cross and Savannah.

If certificate can be examined before boarding, without detention to train, it must be done, and those who hold unsatisfactory certificates will not be allowed to board.

After boarding, the certificate and the person must be carefully examined, and the inspector assure himself that the passenger is not recently from Jesup or any infected locality.

If the passenger is known to be a recent resident of Jesup or any infected locality, or to have been in such place during the past two weeks, he will not be allowed to board, even if he has a certificate.

If, after boarding, either the certificate or the examination of passengers is not satisfactory, the passenger will be turned over to the city authorities at Way

Cross or Savannah, or at the place where he desires to stop, if between these places, and the facts noted and reported.

A record will be kept of the names of all passengers inspected, name of signer of certificate, his rank, date of inspection, date of certificate, place of boarding train, where passenger is bound, and what disposition is made of him, whether passed or turned over to local authorities; also any other facts worth notice.

Inspectors will aid local quarantine authorities in any way in their power consistent with their duties, and give them any information, and obey all local quarantine regulations.

#### NOTES OF NECROPSIES MADE BY SURG. R. D. MURRAY AT BRUNSWICK.

I submit fifteen reports of post-mortem examinations made in Brunswick. I regret our inability to make more, but these were made under many disadvantages and owing to other and pressing duties of reporters, operators, and on-lookers haste was always insisted on. Those who care will, I hope, find something to dwell upon in the different reports. It is sometimes difficult to tell the difference between yellow and other fevers in life; the milder the case the greater the difficulty, but after death the great differences may be observed by anyone who knows colors. This series of necropsies has been of much importance to me, as heretofore I have not had many opportunities to make examinations in malarial deaths and have never enjoyed the help and criticism of others while examining a yellow-fever corpse. It was novel as well as interesting to examine both on the same day or the other before memory of the first had faded.

#### No. 1.

J. H. B.; white; German; æt. 35. Died October 21. Post-mortem examination a. m. October 22, 1893.

Reporter, A. R. Booth; operator, R. D. Murray; present, J. P. Wall, H. Burford, R. E. L. Burford, and J. A. Dunwoody. Reported as yellow fever October 18.

*History*.—Patient a waterman supplying water to vessels. Sought to keep out of the city; violently ill for 3 or 4 days. Never had black vomiting. Seen by one physician besides his attendant who made a serious prognosis; had previously had malarial fever.

*External appearances*: Some pale froth from mouth and nostrils; body of a strong, muscular man, not emaciated. *Rigor mortis* marked, pupils dilated, conjunctivæ pearly, skin white, not jaundiced.

*Incised abdominal walls*: Blood from first cut. Layer of subcutaneous fat of  $\frac{1}{2}$  to  $\frac{3}{4}$  inch in thickness, faintly yellow. In cavity was found one-half pint or so of serum and all parts of intestines and peritoneum were moist. (Here Dr. Murray announced that the case could not be yellow fever.)

*Stomach*: Coat lined with a thin, yellow liquid of color and consistence of thin, mustard paste; curd of milk size of pecan nut near pylorus. Mucous membrane congested, diffused over whole area. No broken spots in the dark mottling, no sign of blood or dark flakes. Fecal odor but not particularly offensive.

*Small intestines*. Evidences of congestion from duodenum, increasing in degree downward to ileum where it was very marked; here the capillary unions on free edge of gut were well marked. Contents of intestine consisted of same fluid as in stomach, increasing in consistency downward; small curd of milk near ileocecal valve. No enlargement of Peyer's patches.

*Colon*: Contents same as above except somewhat darker and thicker. No flakes of blood or mucus, no skins of beans or shreds of meat found in entire tract. Liver enlarged, edges rounded, dark walnut in color, bloody on section, friable

superiorly, nearly pultaceous posteriorly. Vessels full of blood. Gall bladder full to bursting of thick, brownish-black, iridescent, tarry bile. Adjacent tissues tinged with bile.

Spleen much enlarged, shape assumes globe form, dark-blue color outside; blue-black on section. Pultaceous substance oozes from cut surface.

Pancreas presents no evidence of change.

Kidneys enlarged, bloody, enveloped in fat. Color, reddish blue. Capsule not detachable without tearing out tissue. Cortical and medullary substance clearly defined, former pale, latter dark brown; no appearance of fat in tissue.

Bladder contained one pint of dark urine, subsequently shown to be free from albumen.

*Diagnosis.*—Malarial fever; agreed to by all present who each expressed regret that the case was not one of yellow fever as expected. (It was learned that this case was treated by the peddler of a fetich toy called "Oxydonor Victory," and when the announcement was made on the street that the case was malarial fever some talk was indulged in and some advertising resorted to. It was farthest from my desire to give notoriety to irregulars either by condemnation of their wickedness or by replies in the public press.)

#### No. 2.

L. H.; octoroon; female; aged 22 years. Died October 23. Post-mortem examination five hours after death.

Reporter, A. R. Booth; operator, R. D. Murray. Nearly whole corps of physicians present. Reported to board of health as yellow fever October 16, 1893.

No history except as above, and that there was no black vomiting, but there was suppression.

*External appearance.*—Body not much emaciated, had been well nourished; body warm, *rigor mortis* marked, skin deeper yellow hue than her normal, with some purple mottling, no discharges from mouth or nostrils.

Incised abdomen bloodless, fat bloodless, yellowish in color. No fluid in cavity, no fecal odor; intestines pale, dry, and sticky. Stomach contains small quantity, one-half ounce black vomit, walls thickened, mucous membrane soft, easily rubbed off with finger. Congestive areas at cardiac end had stellate arrangement, toward pylorus they were more general and diffused till at same the whole surface was dark and confluent.

Duodenum from pylorus down about 2 feet contained black vomit; external view dark bluish-black in color, blood vessels enlarged and easily traced around free surface of gut, inside dark mottled ecchymoses; membrane soft, no free or red blood visible, all dark or black.

Small intestines externally appeared glistening and pale; inside contents dark at upper end, fading to gray and lighter below. Mesenteric veins distended with black blood, but gut capillaries not prominent except at upper part of jejunum.

Colon gassy; contains grayish-brown feces. Liver reddish, pale-yellow hue, not contracted, edges normal (absence of any fat in tissue shown by subsequent tests). Section showed mottling of same color.

Gall bladder half full thin, tar-colored fluid. Spleen slightly enlarged, normal color and shape, tissue firm, striae plain.

Pancreas, no change observable.

Kidneys enlarged; capsules peeled off easily, leaving smooth, bloodless surface. Incised, evidence of fatty degeneration and blood stasis. Line separating the cortical from the medullary portions absent, giving the cut surface a smooth appearance. Some free blood in pelvis.

Bladder contained 10 ounces dark-colored urine, albuminous. Uterus and



appendages normal. Some arguments as to the reddish liver, the ecchymosis of cardiac end of stomach, and the degenerative signs in kidneys resulted.

This case serves to show in some measure the effects of alcohol as a predestinator in yellow fever.

Diagnosis confirmed.

### No. 3.

H. L.; white; foreigner; aged 33 years. Died October 23. Post-mortem examination six hours after death. Reporter and operator, R. D. Murray. Reported as yellow fever, October 13, 1893.

*History.*—Sickened October 11; was self-treated for two days; from beginning, was a fractious, nervous, and self-willed patient. Suffered with black vomiting for five days; was delirious much of the time for a week; suppression for two days before death. Habits in life, abstemious. If he could have been controlled and soothed there was all chance for his recovery.

*External appearance:* Body emaciated; black vomit on chin and cheeks, dark froth from mouth and nose. Color, intense yellow all over except neck and flexures of joints, where were purple mottlings.

*Abdomen opened:* Subcutaneous fat granular in appearance and very yellow; no blood; no fecal but a strong cadaveric odor; cavity dry; bowels adhere to each other and to peritoneum; omentum dark lined and yellowish.

*Stomach:* Walls thickened, membrane soft and detachable; contains small quantity black vomit. Cardiac end pale from larger diameter to pylorus, mottled with black, increasing to general dark discoloration at lower end; no ecchymosis at larger end.

*Duodenum:* Filled with black vomit, tissue nearly black from congestion and staining of fluid; anastomoses of vessels complete and for 4 to 6 feet into jejunum.

*Small intestines:* Dull, dark in color, except lower half of ileum, which is bluish first and white lower down; contains black vomit to middle of jejunum, and grayish brown feces lower down and into colon.

*Colon gassy, some firm feces in rectum.*

*Liver* much contracted, not filling space assigned to it. Edges sharp, firm, finely serrated. No oil on knife; no sign of any fatty change. Tan or dark box-wood color externally and on section tissue firm.

*Gall bladder* one-fourth full of brown liquid.

*Spleen* normal in size, shape, and color.

*Kidneys:* Not enlarged; capsules adherent, tearing out tissue when removed.

*Line dividing cortex from medulla* distinct. Cortex pale; medulla light brown; some blood; no blood in pelvis.

*Bladder* one-half full dark amber fluid.

Specimens from this case sent for examination.

Diagnosis confirmed.

### No. 4.

G. S.; white; American; æt., 25. Reported October 10, as yellow fever. Died October 24, 1894. Post-mortem examination twelve hours after death.

Reporter, H. Burford; operator, R. D. Murray. In presence of whole corps of physicians.

Previously ill with malarial fever before taking yellow fever. Treated at city hospital.

Had all signs of yellow fever, including black vomiting; suppression at one time; finally died from exhaustion; his mental faculties remaining clear to the last.

*External appearance:* Body, deep dark yellow; much emaciated; eyes yellow. On section no blood, thin layer of fat is deep yellow.

Abdominal cavity dry; intestines dry and dark hued above, yellowish below. Stomach half full of black vomit; ecchymotic spots in larger end, general mottling toward pylorus; membranes soft and stained black.

Duodenum filled with black vomit; reticulations of capillaries complete, giving gut a black appearance; jejunum and ileum contain dark, tarry fluid above, grayish below. Colon empty, except grayish, pasty fluid and some gas.

Liver, boxwood color generally mottled with light walnut color; bloodless; friable; no fat on knife; vessels empty.

Gall bladder about one-fourth full of bile.

Spleen, slightly enlarged; deep bluish slate color; somewhat soft between fibrous tissue.

Kidneys bloodless, yellowish tinge; cortex and medulla distinct; dark blood in pelvis.

Neither is perceptibly enlarged; no fat on knife. Diagnosis confirmed.

#### No. 5.

J. B. W.; colored; male; æt 32. Died October 26. Post-mortem examination eight hours after death.

Reported October 18 as yellow fever, for which he was treated; had no black vomiting. Necropsy in presence of nearly the whole corps of physicians. Reporter, H. Burford; operator, R. D. Murray.

Color of skin, dark walnut, black octoroon, *rigor mortis*, well marked; body moderately emaciated; conjunctivæ yellowish, not jaundiced; pupils dilated. Some blood adheres to knife on making abdominal incisions.

Stomach: Walls thickened; cavity empty, except of gas and pale flakes of mucus; some small ecchymotic spots scattered over surface of mucous membrane, most at cardiac orifice, but continuing to pylorus.

Intestines: Glistening, moist, some pale fluid in lower part of abdomen.

Duodenum not congested; contains layer of brownish fecal matter, as do the jejunum and ileum. Fecal odor; colon contains gas and dark-brown feces.

Liver much enlarged, twice natural size; light walnut color externally, dark olive green on section; no mottling at all; no yellow color anywhere. Entire organ bloody and friable.

Gall bladder distended with thick tarry bile, which has stained under surface of liver and adjacent structures.

Spleen enlarged, full globular, blue black in color, pultaceous.

Pancreas shows no change.

Kidneys somewhat enlarged, pale, bloodless; capsules loose, substance apparently granular; line between cortex and medulla indistinct; no blood in pelvis.

Bladder distended with amber urine.

Other organs not examined.

*Cause of death*—Malarial fever; agreed to by all except attending physician.

#### No. 6.

M. A.; colored; Female, æt. 12½ years. Died October 28. Post-mortem examination ten hours after death.

Reported as yellow fever October 23, 1894. In presence of nearly all the physicians. Reporter, R. E. L. Burford; operator, R. D. Murray.

*History*.—Sick for two or three weeks with high fever, frequent vomiting, not black; could not take food.

External appearance: Child, almost black; much emaciated; no froth at mouth or nostrils.

Section: No yellowness of subcutaneous fat; no blood on knife.

Stomach contains grayish fluid. Cardiac orifice surrounded by ecchymotic spots like stars; other parts of stomach show no congestion or infarctions; fecal odor.

Small intestines moist, pearly white, and glistening; contain grayish and light-brown liquid and gas. The anastomosis of mesenteric veins shows well, but the blood is red and does not extend around the gut; particularly noticeable in duodenum.

Rectum contains grayish brown feces.

Liver dark walnut color; enlarged, congested, bloody; edges rounded; tissue friable, easily broken with fingers; posterior part very soft.

Spleen more than twice normal size; dark-blue; edges rounded, pultaceous, darker on section.

Kidneys enlarged, congested; capsules detachable; cortex and medulla distinct, one pale, other dark.

Bladder full of clear amber urine.

*Diagnosis.*—Malarial fever; admitted by all present.

#### No. 7.

A. H.; white female; American; aged 35 years. Died October 28, 1893. Post-mortem examination eight hours after death.

Reporter, R. E. L. Burford; operator, R. D. Murray. In presence of nearly all the physicians. Reported as yellow fever October 25.

No history in the case except that the woman presented symptoms of yellow fever.

External appearances: No emaciation, no froth from mouth or nostrils, no yellowness of skin or conjunctivæ; pupils dilated.

Section: Nearly two inches of fat over abdomen; knife bloody. Intestines moist, but no free fluid in abdomen. Fecal odor.

Stomach contains dark yellow thick fluid, congested with ecchymotic stars around cardiac orifice and in large end; major portion of stomach free from hemorrhagic mottling or infarctions and so to pylorus.

Duodenum contains the same fluid as the stomach; the capillary anastomosis is not complete and the blood is reddish, not black.

Small intestine empty, but lined throughout with a fluid like mustard paste in color and consistence, lighter than in stomach. The mesenteric veins bright and full, but the capillaries of gut are not prominent.

Colon empty, except of gas and the paste referred to, but color darker; still darker in rectum, with more consistence.

Liver much enlarged, edges rounded, dark walnut color, no mottling, very friable throughout and posteriorly almost like a poultice.

Gall bladder distended to the utmost with black, iridescent, thick bile, staining all adjacent organs. A spoonful of this would give bile color to a barrel of water and a little was hard to wash off the hands.

Spleen much enlarged, shape quite globular, color dark blue outside; blue-black on section, soft as mush. Can not be raised by its own tissue.

Kidneys enveloped in fat, congested, capsules loose. Cortex and medulla distinct with noticeable line of separation; no fat and no blood in pelves.

Bladder empty.

Generative organs: No sign of disease apparent.

*Diagnosis.*—Malarial fever; concurred in by all except the attending physician.

#### No. 8.

X. B. O.; white; American; aged 30. Died October 30. Post-mortem examination October 31, twenty-four hours after death.



Reporter, R. E. L. Burford; operator, R. D. Murray. Reported as yellow fever September 29, and as recovered October 24.

*History.*—Deliberately caught gonorrhea in order to avoid or forestall an attack of yellow fever. After a varying experience with the latter he recovered and was discharged, but the other germs took charge again and in a week he died from malnutrition.

Death certified as rheumatism.

External appearances: Body much emaciated; no yellowness of skin or conjunctivæ; wrists, knees, and ankles puffed and wrinkled; skin discolored over all of them.

Section: No blood on knife; subcutaneous fat not yellowed. Omentum vessels filled with dark blood, which gives a dark tinge to whole organ. Cadaveric odor. Bowels moist, two or three ounces of pale fluid in abdomen.

Stomach: Pale and glistening externally, mucous coat pale and thickened, empty, no mottling or ecchymosis at all. Inner surface covered with gray-yellow mucus.

Liver: Pale, walnut color; edges not sharp, mottled, pale and dark walnut on section; no fatty degeneration shown by tests. Gall bladder half full of bile. Except for lack of blood, liver seemed to be normal.

Small intestines: Upper portion congested at mesentery, pale and glistening on external surface; contained grayish-yellow and brownish pasty liquid. Colon contained same, of more consistence. An almost bloodless body.

Spleen: Enlarged, congested, dark blue outside, darker inside; fibrous tissue apparent.

Kidneys: Enlarged, congested, granular, capsule easily detachable.

Lungs: Hypostatic congestion in both; most dependent portions would sink in water. No cavities or adhesions.

Heart: Pale, small, fibrous, no clots in cavities; tissue did not look like muscle; no sign of fatty degeneration.

*Diagnosis.*—Exhaustion from gonorrheal rheumatism, concurred in by all present.

#### No. 9.

J. H.; Chinaman; aged 46 years. Died November 3 at 9 a. m. Post-mortem examination six hours after.

Reporter, C. Faget; operator, R. D. Murray. In presence of nearly whole corps.

Sickened night of October 29 with bad chill; total suppression of urine for two days; no black vomiting. Not reported to board of health. Death certified as "consumption."

External appearance: No *rigor mortis*, body warm, skin dark yellow, with purple ecchymoses in dependent parts, neck, arms, and groins. Conjunctivæ, deep yellow.

Abdomen: External, fat and omentum very yellow; no fluid in cavity; intestines dry; no fecal odor.

Stomach contains black vomit, membrane ecchymotic, red spots and mottled, soft and easy to rub off.

Duodenum distended with black vomit, which also fills jejunum and part of ileum; color, dark-olive green; capillary anastomoses complete. Mesenteric anastomoses show perfectly the vessels containing black blood.

Small intestines congested, reticulations of ileum most complete, color externally pale yellowish-green tint, varying from dark mottled above to greenish below.

Liver: Yellow; mottled boxwood and walnut on section, contracted, edges sharp, no fat on knife, tissue firm; gall bladder partly full of greenish-black fluid and gall stones.

Spleen: Slightly enlarged, but shape normal; fibrous tissue apparent, tissue slightly friable.

Kidneys: Congested, blood on knife, yellow spotted on section, cortical and medullary substances distinct. Capsules adherent, tearing out some of tissue; several small pale cysts under capsule in each. Some fat but no blood in pelvis.

Bladder empty.

Lungs not examined.

*Diagnosis*.—Yellow fever. (Employer subsequently stated Joe had no cough. R. D. M.) Agreed to by all present.

#### No. 10.

J. H. H.; white; an American; æt. 34. Died 2 a. m., November 8. Post-mortem examination 7 a. m., November 8.

Reporter, A. R. Booth; operator, R. D. Murray. Reported as yellow fever November 3, 1893.

*History*.—Was attacked November 1 with usual symptoms; progressed well till suppression set in November 6; urine was albuminous on November 4; black vomiting on November 7; had formerly been a hard worker and drinker.

External appearance: Body that of a tanned-faced, thin, lean, hard-muscled man; body hot, slight *rigor mortis*; skin dark yellow, with purplings about neck; stains of black vomit on angles of mouth, neck, and the sheets.

Abdomen incised; bloodless; fat and tissues deep bronzed color; cavity dry throughout; no unpleasant odor. Omentum was shrunk, thin, and retracted to walls of stomach; color of dingy slate.

Stomach: Walls thickened; contained 2 or 3 ounces black vomit; mucous membrane soft and easily rubbed off; at cardiac end a few star-like infarctions; these increase in large diameter until at smaller end they are blended in a general mottled black membrane.

Duodenum filled with black vomit, which continues down to ileum; the duodenal membrane dark, soft; reticulations of vessels complete around gut and for much of jejunum.

Lower intestines had several contracted spaces; near to cæcum contents grayish brown.

Colon empty; some grayish-brown matter and flatus in cæcum and sigmoid flexure, but colon was generally in an empty, contracted condition, looking somewhat like a cane made of a shark's backbone.

Liver evidently shrunk from its former size, but slightly above normal, yet edges firm, sharp, serrated; on upper surface numerous old syphilitic atrophic spots.

Color: Tan mottled with darker.

Section: Dark boxwood mottled, a little blood on knife; free oil globules noticed. (This fat due to antecedent disease and not to the yellow fever. R. D. M.) Gall bladder nearly empty; contents, black grumous bile.

Spleen somewhat oversize, normal in color; tissue firm.

Kidneys enlarged, but retaining proper contour; capsule slips off easily. Incision, cortex pale, medulla dark, some free dark blood; some fat globules seen on knife. Line between two portions nearly absent.

Bladder had been empty at 10 p. m. before death; now contains one-half pint urine, albuminous.

Diagnosis confirmed.

#### No. 11.

A. J.; black; aged 36 years. Died November 10, 8 a. m. Post-mortem examination at 3 p. m.

Reporter, H. Burford; operator, R. D. Murray. In presence of nearly whole force of attending physicians.

Reported as yellow fever November 3, and so treated. Fever continued high; bilious vomiting; delirium; no suppression.

External appearance: Large, muscular black man; not marked emaciation; *rigor mortis* marked. Eyes not more yellow than in health.

Abdomen incised; blood on knife; cavity contains fluid. Small intestines injected till anastomoses are complete.

Colon empty, filled with gas; strong fecal odor.

Stomach contains about 6 ounces of bile and mucus; no bloody flakes; ecchymotic spots about cardiac orifice and less along curvature to the smaller end; no general mottling of inner coats, mucous coat softened.

Duodenum contains bilious fluid, not black; the anastomoses not as complete as lower down.

Small intestines distended with gas and contain brownish paste.

Rectum full of brown feces.

Liver much enlarged; edges rounded and smooth; color reddish brown; fat globules on knife; tissue friable, bloody.

Gall bladder nearly full of black, iridescent, tarry fluid, which has stained adjacent tissues.

Pancreas not changed.

Spleen enlarged; color outside light; spleen blue; lower end adherent to abdominal wall; on section, light walnut color; pultaceous; breaks easily.

Kidneys: Both surrounded with thick layer of fat; capsules adherent. Both enlarged to about four-thirds normal size. Cortical substance pale yellowish; medullary portion dark color; dividing line broad; some fat in pelvis. Apparent fatty degeneration in both kidneys.

Bladder empty.

*Diagnosis*.—Malarial fever, and agreed to by all present.

#### No. 12.

B. B.; white; foreign; aged 46 years. Died November 5. Post-mortem examination twenty hours after. Reported as yellow fever November 1, and treated as such.

Reporter, C. Faget; operator, R. D. Murray. In presence of nearly whole corps.

*Previous history*.—No black vomiting, but much bilious vomiting; very high and continuous fever; no suppression; delirium.

External appearance: No emaciation; body warm; *rigor mortis* marked; one-half inch of fat under integument; white froth from nose and mouth; skin slightly yellowed as are sclerotics; some ecchymosis on face.

Section: Subcutaneous fat faintly yellow; blood on knife; intestines moist, slight amount of fluid around them.

Stomach contains small quantity of grayish, thick fluid; cardiac end congested, mottled, and spotted with red color and points; this fades toward large circumference and is entirely absent in small end. Fecal odor distressing.

Duodenum and small intestines contain greenish yellow paste; lower part of ileum empty.

Colon contains brownish yellow feces.

Intestines show dark color below, light above.

Liver much enlarged; edges round, dark-brown color; bloody on section; no yellow spots in substance; friable, almost pultaceous. Gall bladder nearly empty; contains some thick black fluid.

Spleen three or four times normal size; almost globular in shape; dark blue externally; nearly black on section; pultaceous.

Kidneys: Embedded in much fat; both enlarged; capsules easily detached;



medullary substance very dark brown, contrasting in relief with cortical, which is light yellow in color; fat globules exude from both portions when cut.

No blood in pelvis.

*Diagnosis.*—Malarial fever; agreed to by all except attending physician.

#### No. 13.

C. R.; Norwegian; aged 28. Died November 13, 1894. Post-mortem examination eight hours after death.

Reporter, H. Burford; operator, R. D. Murray.

Reported as yellow fever November 4. During illness exhibited all symptoms, with black vomit and suppression of urine.

External appearance: Body deep shiny yellow with large purplish mottled spots, dark froth from nostrils and mouth.

Conjunctivæ deep yellow; pupils dilated.

On section no blood seen; intestines dry; no fluid in abdomen.

Stomach: Contains black vomit, which fills intestine for about 3 feet. Coat of stomach soft and easily rubbed off; generally mottled; uniformly dark brown under mucous membrane, increasing toward and to pylorus.

Duodenum full of black vomit, almost black in color; anastomoses of vessels on free edge shown plainly by the retained blood; mucous coat soft and easily detached.

Small intestine above near duodenum shows anastomoses, and dark externally; below more normal, till in ileum no bad sign is seen; upper part has black fluid, shade changes to brown and finally grayish, with mucus and gas; in several places marked contractions of the gut; large intestine moderately full of grayish matter and partly digested milk.

Liver not enlarged; edge sharply defined and serrated, as if contraction had gone on; boxwood outside and on section bloodless; vessels empty; no fat signs; no degenerative signs.

Gall bladder contained about one-half ounce of thin yellow fluid.

Pancreas not changed from normal.

Spleen normal or less in color, size, and shape; bloodless; fibrous; firm on section.

Kidneys: Right and left capsules slightly adherent, tissue pale, the two portions distinct; no hemorrhage into pelvis; no changes from normal observable.

Bladder full of urine.

Heart pale in color; contains black, thick, but not coagulated blood; tissue seems to be normal; no fatty degeneration.

Lungs normal, except hypostasis lower part of each.

Diagnosis confirmed.

#### No. 14.

L. D.; white; female; age 35. Died November 5, 8 a. m. Post-mortem examination three hours after death.

Reporter and operator, R. D. Murray. Reported as yellow fever November 2.

*History.*—Woman was much run down from long watching over her ill children. Got up morning of October 31, feeling badly. Thinks she had a chill on 30th. Seen November 1. Temperature 103° F.; pulse 104; tongue soft, flabby; no red edge; pain in sides, legs, right shoulder, and head; pupils large. Morning of November 2, had pulse of 96, same temperature; the fall in pulse prompted the physician to report the case to board of health as yellow fever, which action he hedged by a statement that he thought the case malarial. On next visit he regretted his report. The case progressed from bad to worse, the fever ranging from 102° F. to 105° F.,

attended with bilious vomiting, "a lump in the throat," and gradual loss of strength. Delirium set in twelve hours before death; no black vomiting, no suppression.

External appearance: No frothing at the mouth or nose; body not much emaciated, not yellow in color. Conjunctivæ slightly yellowed; pupils contracted; no *rigor mortis*.

Abdomen: Blood on knife; fat not yellow, normal color; one-half pint of pale fluid in abdomen.

Intestines bathed in serum; lower portions dark and mottled brownish. Stomach contracted; walls congested and thickened, contains small quantity greenish fluid and mucus; around cardiac orifice a circle of starlike infarctions, the spaces becoming greater farther from the orifice; a few of same points in greater curvature. Toward pylorus no sign of them or other submucous infiltration.

Duodenum pale; no anastomoses observable; contents greenish milky fluid; not distended. Small intestines gassy, and lower down congested with reticulations of vessels plain all around gut.

Colon full of gas and lined with brownish paste.

Liver much enlarged; bloody on section; light and dark walnut colors, mottled; anteriorly friable; posteriorly much softer and almost black in color.

Spleen enlarged; globular; soft as a flaxseed poultice; nearly black on section; tissue easily oozes out.

Kidney: Left congested; dark brown in color; capsule nonadherent; cortex paler, but other portion dark brown; no blood in pelvis.

Bladder empty. Other organs not examined.

*Diagnosis*.—Malarial fever; subsequent inquiry showed that this person suffered with yellow fever the last half of September.

#### No. 15.

R. S.; white; Swiss; age 23. Died November 20. Post-mortem examination two hours after death.

Reporter and operator, R. D. Murray.

*History*.—Sickened night of November 14. Was given frequent doses of castor oil and C. C. pills, without result until 16th, when he was given a large dose of salts and an enema. Night of 17th a physician was called who found his temperature to be 105.5° F.; pulse, 84, on which I gave a fatal prognosis to stimulate best effort to save the boy. Hyperpurgation had had a bad effect, but the case progressed until November 19, when suppression and black vomiting began the closing scenes. During night of 19th he vomited profusely, in spite of efforts to control; passed no urine during last thirty hours. Suppression proven by use of catheter, efforts to have the exosmosed blood pass down, though efforts of enemas failed. Mental faculties clear to the last effort to vomit, when a gush of black vomit ended all, the fluid flowing over his cheeks, where, drying, it made a chance for an illustration for a book; not a common case, as usually nurses wipe off the faces.

External appearance: Body well nourished; not-emaciated; color bright glistening yellow; some purplings on neck.

Abdomen: Incision bloodless, although death had occurred but two hours before; fat deep bright yellow; cavity contained no fluid. Omentum and intestines dry, but not sticky. No fecal odor. Odor not remarked, although there were eight physicians in the room.

Stomach: Walls thickened; pale outside; contains one-half pint black vomit. Ecchymotic infarctions from middle of stomach to pylorus, but no space of general blending together.

Duodenum: Distended with black vomit; outer surface pale and white; mesenteric anastomoses come to gut but do not run around it, leaving the gut clear, difficult to make out course of small vessels.

Small intestines: Upper half of jejunum, contents black vomit; lower half; grayish and light brown paste; ileum empty; has a number of contracted spaces from 1 inch to 3 inches in length through which a lead pencil only could pass.

Colon empty; contracted from cecum to sigmoid flexure until it looks like a string of master-root beads (worn in country to ward off disease), or a cane made of a shark's backbone, the beads or rings on one side being secured by a sunk-in ribbon, and the whole held fast to abdomen. This contraction of colon is evidently due to the hypercatharsis with which the lad was favored by his friends who knew there was no yellow fever in Brunswick, and it perhaps prevented the expected effects of clysters. If the vomit could have passed down instead of being thrown up there would have been no reason for the death.

Liver, bright boxwood, mottled in color, shrunken, edges sharp, bloodless, no sign of fat in tissue.

Gall bladder nearly empty; 2 drams brown bile in it.

Spleen normal in size, shape, color, and consistence.

Pancreas: No change noticeable.

Kidneys: Both enveloped in fat, both congested or moist with watery blood, dark in color. Cortex dark, medulla darker, the line distinct, no blood in the pelvis.

Bladder contains half pint of urine (albuminous) and yet six hours before it was empty. Thus showing what for years I have insisted on; that there is invariably post-mortem escape of urine through the kidneys even when the suppression has been positively demonstrated.

Diagnosis confirmed.

JOHN WILLIAM BRANHAM.

The following announcement was sent to the officers of the Marine-Hospital Service:

TREASURY DEPARTMENT, U. S. MARINE-HOSPITAL SERVICE,  
OFFICE OF THE SUPERVISING SURGEON-GENERAL,  
*August 23, 1893.*

*To the medical officers and acting assistant surgeons of the U. S. Marine Hospital Service:*

It becomes my painful duty to announce the death from yellow fever of Assistant Surg. John W. Branham, at Brunswick, Ga. He was taken ill about August 10, while in the performance of quarantine duty at Brunswick, and died on the afternoon of the 20th.

Assistant Surg. Branham was born in Walker County, Ga., October 27, 1868, and his early education was derived from the schools of his native State. When he was 13 years of age he moved to Baltimore, Md., and received a general education at the Baltimore City College. He then studied medicine at the College of Physicians and Surgeons, Baltimore, and graduated at the head of his class from that institution March 13, 1889. During this time his elder brother, Dr. J. H. Branham, of Baltimore, was his preceptor. After graduation he first served as resident physician at the City Hospital in Baltimore during part of 1889 and 1890, and afterwards was assistant quarantine physician for the port of Baltimore from May until November, 1891. Leaving Baltimore he moved to Kempsville, Va., where he practiced medicine until entering the medical corps of the Marine-Hospital Service. At the examination of candidates held in Washington, D. C., in March, 1893, Dr. Branham passed first among twenty-two applicants, and was commissioned assistant surgeon April 19, 1893, and on April 21 was ordered to the Marine Hospital, Stapleton, Staten Island. On the 25th of July Assistant Surg. Branham was ordered to Brunswick, Ga., to take charge of the quarantine at that port, where he remained in the active discharge of that duty until he was stricken down with yellow fever.

As an officer Assistant Surg. Branham was held in high esteem both by those under whom he served and by the Department. His ability was fully recognized, and he was chosen for the important duty of reorganizing the quarantine of Brunswick and establishing it upon a firm sanitary basis, the local quarantine at that point having proved to be insufficient. Through his death the service has lost an able officer.

Personally Assistant Surg. Branham was a man whose general education and medical attainments won for him the highest respect, and his social relations with



his brother officers and others were characterized by a manliness of deportment and gentlemanly bearing that won the affection of all.

I have extended to his family the sympathies of the corps.

WALTER WYMAN,

*Supervising Surgeon-General Marine Hospital Service.*

As showing the public sympathy aroused by the death of Dr. Branham the following editorial from the Savannah Press of August 19, 1893, is here reproduced:

*Brave Branham.*—He meets his death in responding to the plain call of duty. He dies in the service of his country just as much as the soldier who falls in battle. Ordered to a dangerous and exposed place in the time of extreme peril he hastened to his post with fever on him. In spite of wasted strength he entered upon the most exacting work. He is the first victim to the pestilence he sought to stay. No warrior ever made more gallant fight for life. His vitality, in the face of the fatal symptoms of yellow fever, was marvelous, and for several days inspired the hope that he would live. He meets a soldier's death and fills a niche of glory for his country. Men like Benner and Branham are made of good stuff and such examples are heroic. The courage which quietly meets and grapples with insidious pestilence is calmer, yet stronger, than the valor which storms the fortress and plants the flag upon the shattered ramparts. Brave Branham. He tossed upon an isolated cot and rests without the death salute or the bugle sound. But with all that he fills a hero's shroud, and, "After life's fitful fever, he sleeps well."

REPORTS OF MEDICAL OFFICERS OF THE MARINE-HOSPITAL SERVICE DETAILED BY THE PRESIDENT TO SERVE IN THE OFFICES OF THE UNITED STATES CONSULS AT FOREIGN PORTS AND OF OFFICERS DETAILED FOR OTHER SPECIAL DUTIES IN CONNECTION WITH THE MEASURES TO PREVENT THE INTRODUCTION OF CHOLERA IN 1893.

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REPORT OF SURGEON FAIRFAX IRWIN, DETAILED FOR DUTY AT MARSEILLES  
FRANCE.

*To the Surgeon-General, U. S. Marine-Hospital Service, Washington, D. C.:*

SIR: In compliance with your instructions contained in a circular letter dated July 6, 1893, I have the honor to submit the following report of transactions at Marseilles, France, relating to the efforts to prevent the introduction of epidemic disease, notably cholera, into the United States. I arrived at Marseilles and entered upon duty March 27, 1893, and found at once that as far as the observation of epidemic disease or the collection of statistics relating thereto was concerned I should have special difficulties to encounter, which I had not observed at any other continental city.

In company with the U. S. consul, Mr. Trail, I made the usual call on the *maire* of the city and informed him of my arrival, the object of my coming to Marseilles, and the desire of my Government to be kept informed as to the sanitary condition of the city. The *maire* courteously stated to me that he had no power to furnish information to foreign representatives, however well accredited, and referred me to the *préfet*, the representative of the national Government. The visit to the *préfet* was apparently more gratifying, as it promised great things for the future, destined, however, never to be realized.

Subsequently I informed the *préfet* that I would be quite unable to furnish bills of health to vessels going to the United States without a proper knowledge of the sanitary condition of the city, more especially as related to the number of cases and deaths of certain contagious diseases occurring from time to time. I also invited his attention to the fact that the sanitary returns which other cities furnished weekly were in Marseilles only to be had monthly, and asked to be allowed either to inspect the books daily or weekly or to attend the hospitals. Many promises were made, but none were ever kept.

By informing the steamship companies that unless I was furnished with the necessary information I would be compelled to withhold the bills of health, I succeeded in obtaining a weekly statement from the *préfet* to the effect that there was no epidemic disease present in the city.

There is no doubt that a systematic effort was made at Marseilles to conceal the presence of cholera, and although it did not appear until nearly two months after the official visits just described it was never acknowledged by the authorities so far as I am aware.

One of the reasons given for this reticence was that twice recently, viz, last February, and also the preceding October, slight epidemics of cholera had occurred; that the *préfet* had called together the representatives of foreign governments then in Marseilles and given them the information of the first cases. This action was followed by the usual prompt quarantine regulations issued by nearly all Mediterranean ports against Marseilles, to the great commercial injury of the city.

Certain it is that the outbreak of cholera this spring was most carefully concealed, and while even French newspapers contained every day dispatches giving very accurate information as to the spread of cholera at Alais, Cette, Montpellier, and, in fact, all the towns of the Midi, where it prevailed, not a word was to be found relating to Marseilles. The number of deaths are published daily in an obscure newspaper, giving age and address, but not the cause of disease. By watching this report some idea of the death rate could be had, the normal being placed at about 35 daily. I was satisfied later that this was somewhat misleading, as it is hardly probable that the deaths in hospitals were included in this report.

However, the number of deaths in certain sections could be observed. All deaths on vessels in harbor could be quietly investigated, and deaths in hospitals could be inquired into by making judicious acquaintances among the employés. Nothing was neglected, not even watching the roads to cemeteries, when it was found that no help was to be expected from the sanitary authorities. Bills of health stating the presence of cholera in Marseilles were issued to vessels by myself at least six weeks before the same facts were stated on the French *patente de santé* or the British bill of health.

The city government of Marseilles is in the hands of the socialists, and I received no courtesy or recognition from them unless the bare right to existence in their city could be so called, in strange contrast to the treatment my colleagues received in other countries. I made an arrangement by which I obtained information of the appearance of the first cases of cholera in Marseilles, and of which I notified you by cable.

On April 18, under your instructions, I proceeded to Naples for duty, where I remained about five weeks, returning to Marseilles May 20. The period mentioned as being passed at Naples will no doubt be fully covered by the report of Assistant Surgeon George B. Young, Marine-Hospital Service, the efficient officer in charge there.

This period at Marseilles was quite unimportant as far as details are concerned, and Passed Assistant Surgeon Carrington, whom I relieved on my return, had observed nothing unusual, although he informed me that there was a good deal of talk concerning cholera in neighboring towns. The first cases actually occurred a few days after my return, that is, during the week ended May 27, in the Asylum of St. Peter. From that time the disease followed the slow and erratic course which has been characteristic of the epidemic in southern France so far this year, seemingly affecting no particular locality and showing no tendency to spread, yet still retaining a hold on the community.

From June 12 to July 9 there were about 140 deaths, and at the latter date there were occurring perhaps six or seven cases daily. There are two factors which I believe have to do with the slow progress of cholera in Marseilles and vicinity this year; first, the unusually dry weather, and, second, the education of the people to take the proper precautions in the presence of danger.

Even after the few slight rains during my residence in Marseilles there was always an increase in the number of cases of cholera. Three small epidemics in the space of two years is likely to teach some of the rules of hygiene to a people, and certainly no one can accuse the Marseillaise of an undue fondness for their water.

The reputation of Marseilles as to its sanitary condition is probably the poorest



in Europe, and has been so for many years, certainly ever since the great cholera epidemic of 1884.

It is pleasant to be able to state that the work of completely retraining the city is now going on and making substantial progress, and there is every prospect that when this great work is complete Marseilles will be as healthy as any other city of its size and situation.

At present the drainage is very bad, and the most frightful odors from the sewers salute the passer-by, even on the magnificent Cannebière and the lovely Prado, unless masked by the hardly less objectionable sulphur which is universally burned in the sewers. The city being on a plain facing the Mediterranean and surrounded by mountains, naturally has its drainage toward the sea, and this is the direction with a few unimportant exceptions. One of the streams of Marseilles, the Jarret, receives a number of sewers, and its waters are foul and stinking beyond belief. This stream falls into the Huveaune River, which itself assumes the appearance of a sewer and flows along the Prado, through the grounds of the Chateau Borely, and empties into the sea near one of the large bathing establishments of the Corniche.

A large part of the most densely populated districts of the city drain into the old port, always crowded with sailing vessels of every description, and with a very large population living close around its polluted waters. The collecting sewers are the gutters, and these tumble their nauseous contents down the steep streets around the vieux port and into its stagnant waters, where not even a tide exists to prevent stagnation.

Not far from the old port, beyond the Chateau of Pharo, once used as a cholera hospital, is the Catalans bathing place, the most frequented of them all, and right here empties one of the largest sewers of the city. Owing to insufficient fall and want of flushing, the sewers emptying into the old port are often blocked and full to the level for hundreds of yards from their outlets, accounting for the terrible sewer odors for which Marseilles is famous.

There is no doubt that the water supply of Marseilles is adequate in quantity, but the quality, unfortunately, is very bad. There are some cisterns and these are frequently contaminated by the house drains, while the main supply itself is infected before reaching the city. The importance of this water supply to other countries than France can hardly be overestimated, inasmuch as ships of all nations call at this port and the greater part of them obtain their water supply here. There has been a city on the site of Marseilles for twenty-five hundred years, and the condition of the subsoil from contamination should be considered.

Formerly all the water supply was taken from the Jarret and Huveaune, streams already spoken of, and fortunately now used only to a limited extent. There is still a small amount of water taken from a spring called La Rose, but so small as not to be of much importance.

The main water supply of the city is from the river Durance, a mountain stream. The water is taken from this river and brought to Marseilles by means of a canal and aqueduct about 80 miles in length. Nine miles from the point where the water is taken it reaches the settling basin of St. Christophe, measuring 1,500,000 cubic meters. From this point the water flows on by the Roquefavour aqueduct to a second reservoir, known as the réaltort, having a capacity of 4,500,000 cubic meters; and besides these there are four other smaller settling basins. Nine miles beyond this, at Gavotte, the canal branches to supply the suburbs of St. Louis and St. Henri, the former furnishing this year some of the earliest cases of cholera.

Proceeding, the main water supply goes on to Marseilles, reaching the city at Longchamps, about its highest point. Here is the very handsome Chateau de Longchamps, with its museums, parks, and great cascade. The water, in amount

supplied, is ample—about 700 liters per day for each inhabitant. The water of the Durance is very muddy, and contains many bacteria, especially the *bacterium coli commune*.

The principal place of contamination of this water supply is for about 4 miles between Merlon and Longchamps, where the uncovered canal passes through a very thick population, besides 20 flour mills and 2 oil mills. The water is not filtered at any point, and the mud and filth fill the settling basins. These basins are, in my opinion, worse than useless. The following analysis of the water was made by Dr. P. David (pharmacien-major de Tre classe au XV Corps d'armée):

|                          | Grains per gallon. |
|--------------------------|--------------------|
| Total solids .....       | 25.41              |
| Chlorine .....           | 1.19               |
| Nitrates .....           | Trace.             |
| Nitrites .....           | Trace.             |
| Free ammonia .....       | 0.0007             |
| Albuminoid ammonia ..... | 0.0021             |

This is the water carried to the docks and supplied to the ships there. My first action when the presence of cholera was assured was to insist that the two passenger lines going to the United States should take the water to be used on the voyage at Naples. To sum up, the water used in Marseilles is principally from the Durance, but in addition there are also supplies from La Rose, the Grands Puits, and the Huveaune. The last is the most dangerous water in the city, and is consumed in the neighborhood of the old port. An analysis shows it to contain a much larger percentage of albuminoid ammonia than the waters of the Durance.

The precautions against the occurrence of an epidemic taken by the sanitary authorities are at present not very evident. Contemplated changes in the sewers and to prevent the contamination of the water supply can not be completed under six or seven years.

The streets are kept fairly clean, and superficially Marseilles in that respect is above the average of cities on the Continent. Sulphur is burned daily in the sewers to the great damage of neighboring paint and gilding, but in a measure masking the frightful odors that emanate from them. Beyond these I know of no precautions being taken; in fact, concealment of actual cases of cholera seems of more importance than prevention. About ten days before my departure from the city, and when concealment was no longer possible, at least to inhabitants, the authorities began a medical inspection of departing vessels, noting, too, for the first time the existence of suspicious diarrhea cases on the bill of health. This, however, did not prevent the departure of a good many vessels, notably English, with cholera on board.

I had occasion twice to arrive at Marseilles on a vessel coming from Naples and was surprised at the quarantine methods in vogue at the time. After arriving within the port, but before being allowed to dock, the captain went in his boat to report his arrival and the condition of the vessel. This report being favorable, she was then allowed to dock. Certain it is that on neither occasion was a medical inspection made, and it may be added that there is quite a large emigration from Naples to Marseilles.

The number of vessels sailing from Marseilles to the United States is fortunately very small, occasionally a sailing vessel, usually Italian. There are, however, two steamship lines engaged in the emigrant carrying trade, which depart from Marseilles, in the height of the season each about once in two weeks, proceeding via Naples, where the emigrants are embarked, to New York. These two lines are the Fabre steamship line and the Compagnie Nationale. Most of the vessels are old steamers fairly clean and well kept, having been used by the French Government for the transportation of troops.

With some changes in ventilation and running water introduced into the latrines, lavatories supplied, and with careful cleansing, they were made fairly comfortable, although I myself believe that under no circumstances should emigrants be carried between decks, as is now done. No matter what allowance for ventilation is made between decks, in bad weather it will always be found insufficient. Ports are closed, ventilators stuffed with pillows and bedding by the emigrants themselves, and under these circumstances, with seasickness added, the scene in this locality on an emigrant ship is something frightful. It ought not to be possible.

There was very little, if any, trouble at Marseilles in carrying out the regulations as applied to emigrant vessels; the agents and owners were anxious to comply with the law, and made all changes, sometimes at considerable expense, with alacrity. There was some objection at first to filling the water tanks at Naples, owing to the greater expense, but as Assistant Surgeon Young made the same demand there was nothing for them but to comply. I made two examinations of these steamers before each sailing, first after arrival and the clearing of the cargo from the hold; the vessel then usually went into dry dock and a very careful examination of the holds and timbers could be made. At this time I gave directions as to what changes I desired made, so as to give ample notice and to be able to verify them at the second examination. This final inspection was made six hours before the vessel sailed, and included everything relating to its sanitary condition. The crew were mustered, vaccinated when necessary, and the manifest carefully gone over. The ships of the *Compagnie Nationale* all carried an excellent steam disinfecter on deck, which was extremely useful and convenient. These disinfecters are not very expensive and take up but little space. I think every vessel carrying emigrants should be compelled to provide one. On two occasions only, and it occurred once on each line, the crew were not all on board at the final inspection; the ship was in each case delayed twelve hours and it never happened again. With the power to refuse a bill of health, if necessary, no officer need anticipate any difficulty in enforcing the sanitary measures called for by the regulations.

The number of emigrants leaving Marseilles during my tour of duty there did not in all amount to more than fifty. Everything was done to discourage any such movement, and the companies were averse to it themselves. The French do not emigrate, and the few who desire to go from Marseilles are as a rule Italians, Greeks, and Algerians. Cholera having appeared, I declined to furnish emigrant-inspection tickets, except after five days' observation, and this terminated the little emigration that existed. A few emigrants go through the city, en route for Havre or Bordeaux. At the former place they were subject to the usual five days' detention, and I suppose the rule was the same at Bordeaux.

The principal difficulties met with at Marseilles refer almost entirely to merchandise and its disinfection. Rags are exported to the United States in considerable quantities, and before allowing any movement of this kind I required the exporters to establish disinfecting rooms answering to every requirement of the Department regulations.

Only one merchant arranged the required plant, but his establishment is now all that could be asked. The appearance of cholera in May put a stop to this trade entirely, for although the disinfection might be most complete, the opportunities for reinfection of the exterior or coverings of the bales are very great, rebaling, cartage, and handling being considered. The exportation of rags may be arrested under the provisions of Article VII, section 2, of the quarantine regulations, and I am decidedly of opinion that to this list should be added wool and hides.

A large quantity of the rags packed at Marseilles for shipment to the United States are gathered at or in the vicinity of Carcassonne, where cholera is now pre-



vailing, and the disinfection of these articles can not be too carefully observed. Hides are exported in large numbers, and were disinfected with sulphur in the usual manner except where the certificates of origin demonstrated the fact that they were collected in noninfected localities until the appearance of cholera required the disinfection of all hides without reference to their origin. Rabbit skins were fumigated with the rest, but as these are soaked in a solution of arseniate of potash and packed in benzine before shipment it really does not appear to be necessary. No other article of merchandise has given so much trouble as to questions of origin and disinfection as wool. Most of the wool handled at Marseilles is brought from Turkey, Russia, and Persia for transshipment, much of it to the United States.

Shippers and brokers declare that the regulations regarding the disinfection of wool are prohibitive, first, because of the expense attending the process; and, second, because the methods required injure the wool. I superintended the disinfection of about a thousand bales of wool at Belle de Mai, one of the suburbs, by method No. 2 of section 5, Article VII, of the regulations. It was a very difficult and troublesome work, and the amount of space required is very large. I was given to understand that this procedure added about 1 franc a bale to the cost of handling. This material should, of course, have been properly disinfected at port of shipment, and, indeed, a large proportion of it coming from Batoum was provided with a consular certificate which was worse than none at all, as it distinctly stated that the wool had been disinfected in a room "by no means air-tight."

As these wools almost without exception come from infected or suspected localities the restrictions applied by the regulations are to be commended, for although individual loss may be occasioned it is not to be considered for a moment when regard is had to the health of the people of the United States.

In any case, even if provided with proper certificates, I required all merchandise usually subjected to fumigation to be again disinfected in bales as a protection, as far as might be, against reinfection from handling at the docks of Marseilles.

In the month of April 4 vessels bound for the United States, carrying a total of 128 crew and 7 passengers, were inspected. In May there were 8 vessels, with 278 crew and 43 passengers. In June 6 vessels, with 185 crew and only 1 passenger.

Of the number of vessels examined only five were sailing ships, and indeed the total will show that the direct trade between Marseilles and ports of the United States is very small.

The history of the epidemic of cholera so far in the south of France is most unusual. It has appeared in upward of thirty towns and has lingered for more than two months without becoming of alarming proportions, except, perhaps, at Cette and Alais. This, no doubt, is partly due to the very dry weather and to the small towns infected. To Marseilles the latter reason would not apply, but as a substitute it may be stated that the infected water supply is little used by the Marseillaise for drinking purposes.

Since January, 1893, the following towns and villages have been reported as infected with cholera: Lorient, St. Athanase, Nanterre, Quimper, Erguéarmel, Vannes, Nantes, Riantec, Port Louis, Gavray, Poulinice, Plöermel, Pontivy, Guiberon, Auray, Belty, Sables d'Olonne, Cette, Mines, Marseilles, Toulouse, Hyères, Toulon, La Seyne, Montpellier, Lunel, Lésignan, Alais, Lyons, Carcassonne, Mâcon, Avignon, Gavres, Larcac, Luc sur Aude, Pamiers, Mirepoix, Limoges, Privas, Sorgues, Cuers, and Cadière. Of all these places Marseilles, perhaps, is the only one of any real importance as far as the United States is concerned.

The fact that there have been three epidemics of cholera in this city within the past two years—and it should be stated here that statistics show, from January 31, 1893, to February 16 there were 297 deaths from cholera—and that the authorities

studiously conceal the existence of the disease, makes this city doubly dangerous as an infecting center.

The projected changes in water supply and sewerage can not be completed under six or seven years, and until then, or until some arrangement can be made for the acquisition of accurate information by the representatives of our Government, I believe this city should be considered and treated as an infected port.

It may not be out of place for me to add my opinion that the detail of medical officers for duty abroad should only be made in case of threatened or actual epidemics, as in fact the law directs, and that a permanent arrangement for inspectors at foreign ports is unnecessary. The mere medical inspection of emigrants can be made to good advantage at home, and is free from the objection of performing duties on foreign soil under surveillance and with the reluctant consent of the governments concerned. In face of threatened epidemic disease foreign inspection is a necessity; in any other case it is superfluous and therefore unnecessary. I wish to state, also, my view that the present arrangement is the best that could be made from a business point of view. It is essential that the consul and medical officer should work in harmony. All matters relating to medical and sanitary affairs should be under the exclusive control of the latter, and this being understood all transactions are more certainly and easily carried out at the consulate than elsewhere.

It appears to me that the inspection of all vessels bound for the United States without regard to the sanitary condition of the port of departure or the character of the ship is quite unnecessary. All passenger vessels should be inspected, and of course ships of all descriptions proceeding from an infected port, but exception could be made of freight vessels going from ports in good sanitary condition.

Respectfully, yours,

FAIRFAX IRWIN,

*Surgeon Marine-Hospital Service.*

LONDON, *August 14, 1893.*

REPORT OF SURG. W. A. WHEELER, DETAILED TO VISIT FOREIGN PORTS WITH A VIEW TO SECURING UNIFORMITY OF PROCEDURE ON THE PART OF MEDICAL OFFICERS.

ELLIS ISLAND, PORT OF NEW YORK, N. Y., *October 14, 1893.*

*To the Surgeon-General, U. S. Marine-Hospital Service, Washington, D. C.:*

SIR: I have the honor to submit the following as a report of my inspection of the work done by medical officers of the Marine-Hospital Service stationed at various foreign ports. This work was undertaken in accordance with the following instructions:

LETTER OF APRIL 17, 1893.

"As soon as practicable you are directed to proceed to the foreign ports at which United States medical officers have been stationed, for the purpose of carrying out the provisions of the recent quarantine act. Having been a member of the Board which formulated the foreign regulations, and on account of your familiarity with the immigration service at New York, it is believed that you will be able to properly inspect the work of the medical officers at the foreign consulates. You will remain long enough at each port to observe the method pursued by these officers, to explain any doubts they may have with regard to their duties, and give such instructions in accordance with the regulations as seem to be necessary. On completion of this duty you will return immediately to your station at Ellis Island.

"Very respectfully, yours,

"WALTER WYMAN,

*"Supervising Surgeon-General M. H. S.*

"To Surg. WM. A. WHEELER,

*"U. S. Marine-Hospital Service, Ellis Island, New York."*

*Havre*.—I left New York April 29 by the French steamer *La Touraine*, reaching Havre May 7. There I remained but two days, being hurried away by a telegram from Hamburg urging my presence there at once.

While in Havre I learned that the General Transatlantic Company is the only line carrying passengers to America, with the exception of a fortnightly steamer of the Union line from Hamburg, which during the summer calls at Havre and carries a comparatively small number of steerage passengers. All emigrants from Havre come from northern Italy and Switzerland and Belgium—practically none from France. They are collected at Basle, on the Swiss frontier, and Modane, on the Italian frontier, and on Thursday of each week a special emigrant train brings them to Paris, whence they are brought in another special emigrant train to Havre on the day of sailing, which is Saturday.

They do not stop at all in Havre, but are placed at once on the steamer. No provision whatever is made for their stay here, and the special from Paris does not arrive until about the sailing time of the steamer. Only the better class of emigrants come via Havre, as the price of passage is higher than some other lines (\$40) and the French steamers are very well prepared to care for emigrants. They are furnished new beds and pillows, clean blankets, and plenty of nourishing food, as I can testify from personal observation on the trip over, which food is served them on long tables in the steerage. Under the new immigration law it is probable that the French company will bring its steerage passengers to Havre the day previous to sailing, that the required manifest may be properly made out and authenticated, and that will allow of a more thorough and leisurely inspection by our medical officers than is possible at present.

There is at Havre a most excellent local health board, and our medical officer will have, I believe, no difficulty in obtaining all the information desired as to the sanitary condition of the city.

*Hamburg and Bremen*.—I left Havre on the night of the 8th and went direct to Hamburg, at which port I remained eight days. While at Hamburg I visited Bremen, only two hours distant, and inspected the arrangements made there for the care of steerage passengers by the North German Lloyd Steamship Company in conjunction with the U. S. consul.

The business of carrying emigrants to the United States via Bremen is done entirely by one company, the North German Lloyd, which dispatches in the busy season (viz, the spring of the year) three ships per week to New York, and occasionally, about once, sometimes twice, a month, a ship is sent to Baltimore. The emigrants are brought by rail from Germany and Austria-Hungary and some parts of Russia, and are housed in Bremen in some forty hotels, which are all owned by private parties, but are, to a certain extent, controlled by the steamship company. The municipality of Bremen does not take any cognizance of the emigrants, and they are handled entirely by the steamship company. All emigrants from Germany and northern Europe, excepting Russia, are allowed to take the steamer next sailing after their arrival in Bremen, while those coming from Austria-Hungary and Russia are at the present time obliged to remain in Bremen in certain houses, which are designated by the steamship company, for a period of five days after arrival, but during those five days they are allowed to roam freely about the city and mingle with the citizens and other emigrants. The vessels of the steamship company do not come up to Bremen, but discharge and take on all their passengers at Bremerhaven or Nordenhamm, directly opposite, on the Weser, about 50 miles below the city of Bremen.

The sailing hours are Tuesdays, Thursdays, and Saturdays, in the forenoon. On Monday, Wednesday, and Friday afternoons, at 1 o'clock, in a large building near the union station in Bremen, built by the steamship company as a baggage room and inspection depot, the emigrants are inspected and vaccinated by two physi-



cians of the city of Bremen, named Dr. Von Pelzer and Dr. Hahn, employed and paid by the steamship company and placed under the orders of our consul, Dr. Hugo M. Starkloff. These physicians are assisted in their work by one or more of the company's ship surgeons who may happen to be in port. The vaccination is made hurriedly, and the emigrants are then, while their upper clothing is removed, inspected and passed on to a waiting room, where they arrange their clothing, often while so doing wiping off the virus with which they have been vaccinated. They are then given an inspection card and dismissed to their hotels. Next morning early, usually about 6 a. m., they reassemble at the railway station, and those having cards of inspection are taken by train to steamship at Bremerhaven. They are there again inspected, this time by the consul, who goes with them for the purpose of issuing the bill of health and the manifest, as required by the new immigration law. The baggage of emigrants is placed in the baggage room, referred to previously, in Bremen. I was told that the baggage of all those coming now from southern Europe and Russia was disinfected, and I visited a shed on the company's grounds, near the baggage room, which was used as a sulphur fumigating chamber. I entered this chamber, and the outside of a lot of baggage was being fumigated in an atmosphere which contained some fumes of sulphur. Adjoining this shed were the foundations of a building which will contain three steam disinfecting chambers, oval in shape, 6 by 8 feet (I saw the chambers on the ground), provided with racks, a front and back door, and rails on which to run the car, and arranged for both steam and hot air. These chambers are being built by the steamship company and could be completed and in running order in twenty days.

I visited the only other steam chamber in the city, that at the poorhouse, which consists of a single chamber about the size of those previously described, and I was told that it was used by the steamship company whenever it was desired to steam any baggage of their passengers. It was not in use upon the day of my visit. The immigrants who come to the United States via Bremen are, as a rule, clean, healthy people, because they come largely from Germany, and it is not as favorite a port of departure for the Russians, Bohemians, and Poles as Hamburg is. Moreover, the rates of steerage passage to America are higher by the North German Lloyd Company than by one of the Hamburg lines, the Union. I must say the work of inspection of immigrants as carried on by the physicians under our consul is fairly well done, but I take exception to their methods of vaccination, which, as you are aware, is not generally done before the departure of the ship, but by the ship's surgeon the first day out of port. With regard to the baggage, very little of it at present, in my opinion, needs disinfection, but if it did need steam disinfection, at present it could not be done, at least on any large scale. Consul Starkloff informed me that the houses from which the people who had smallpox on the steamers *Lahn* and *Gera* came had been ordered closed and fumigated. I remarked that as each and every emigrant had been vaccinated in Bremen before his departure, I was forced to the conclusion that either vaccination did not protect, or the work had not been properly done. Since my visit to Bremen one of our medical officers has been sent to Bremen to relieve the consul of this sanitary work, and the necessity for the employment of physicians under the authority of the consul no longer exists. From Bremen I returned to Hamburg and remained a week, during which time I had abundant opportunity for observation.

The bulk of the commerce between Hamburg and the United States is in the hands of the Hamburg-American Packet Company and the Union Line, as it is called, which is owned and controlled by the owners of the Hamburg-American Packet Company. All emigrants, whether going via the Hamburg Packet Company or via the Union Line, are furnished and cared for by the Hamburg-American

Packet Company. During the cholera scare of last year the packet company constructed at its own expense a building near their warehouse on the other side of the Elbe, which is called the barracks, capable of accommodating 800 persons. These barracks are fairly well ventilated and provided with bath rooms (four tubs in each room), a small (8 by 10 feet) steam disinfecting chamber, fairly good water-closets, kitchen, and dining room.

Upon the completion of this building the city of Hamburg took possession of it, placing it under the charge of the police department, and the city itself undertook the work of detaining all persons coming from Russia, Hungary, Galicia, and Poland, and keeping them at the barracks and steaming their baggage. It was claimed that all the people were given a bath at once, and while bathing, their clothing was steamed, and afterwards their baggage. In company with Dr. White I visited the barracks on my second day there, and I noticed that many people (there were then some 700 detained) had not been bathed and that no baggage just then was being steamed. The women and children were lying on their beds or crowded in their dormitories, and all were mingling freely together, those who arrived that day with those who had been there five days. I then visited the steam disinfecting lighter, which the packet company has furnished Dr. Nash at Dr. White's suggestion, for the steaming of such baggage as he (Dr. White) requires done. It is an iron boat divided into two compartments, not lined, and the steam is introduced from a boiler on a tug alongside. The chambers not being lined, it was not possible the day I visited it to raise the temperature of the chamber over 150° F. It appears that the city of Hamburg causes all Russians, Austrians, Poles, and Hungarians at present to be switched off just out of the city limits and carried to the barracks, where they are detained in the manner I have described for five days, and then allowed to go aboard the steamers for the United States. In an interview with the chief director of the packet company it was agreed that, if the city was willing, all Austrians, Hungarians, and Galicians should come into the city and be kept in a large hotel which Dr. White and I visited, there to be under the care of Dr. White until he should consider them safe to go aboard ship. This house will accommodate some 400 people, and the company has promised to provide six bath tubs and make other slight changes and place the house under charge of Dr. White, who can make a daily inspection of the place and see that his requirements are carried out. That will materially reduce the number of people at the barracks and enable those kept there to receive more attention. I again visited the barracks a few days later and found a great change. The steam plant was in full blast and a lot of clothing was being subjected to a temperature of 225° F. The bathrooms were in use. One of the dormitories was being cleaned and many of the people were washing their clothes on benches in the yard. I was asked to make suggestions, and that convinced me that the packet company had more to do with the management of the barracks than they had at first been willing to admit.

I suggested that Dr. White be allowed to make a daily visit to the barracks, and that his suggestions be carried out as far as possible; further, that a washhouse be built to encourage the women to wash all their clothing as soon as it had been steamed, and that a pavilion be built to allow the people to get out of their dormitories during the whole day, so they might be thoroughly cleaned and aired for the night. About 550 people were there on the day of my visit, of whom 150 belong to the classes which will be hereafter cared for in the hotel in Hamburg, under Dr. White's direct supervision. The inspection of emigrants just previous to sailing is made in the waiting room of the packet company at the landing, and at present is conducted by four physicians: Dr. Nash, who is employed by the packet company as agent of Dr. Jenkins, of New York; Dr. Muller, a Hamburg physician, employed by the packet company to assist Dr. Nash; Dr. Homann, who is employed



by the city of Hamburg as police surgeon to protect the people of Hamburg; and lastly, by Dr. White, who, after inspection, issues them an individual card.

The ventilation of many of the old ships of the Hamburg-American and the Union Line was found insufficient. Improvement is being made in this respect gradually.

*Genoa.*—On leaving Hamburg I went direct to Genoa, where I spent three days, during which time I made an inspection of the steamship *Fulda*. I learned that the North-German Lloyd Company of Bremen is the only line carrying steerage passengers to the United States from Genoa. They have three ships employed in this trade during the winter, and but two during the summer. A round trip consumes five weeks, so that during the winter three ships leave Genoa for New York every five weeks. It is thus the duty of an inspector to look after but two passenger ships a month at Genoa, carrying last year to the United States some 7,000 steerage passengers. In addition to this there are some merchant vessels, mostly French and English, carrying marble and cotton waste to the United States. The emigrants from Genoa are almost all from the northern portions of Italy, with a few from Switzerland and Austria. They are a clean, intelligent people generally, and the ships which bring them are well arranged and ventilated, and usually are not crowded. At the present time all emigrants are inspected on shore before being placed on shipboard, and as there have been a number of cases of measles and scarlet fever in Genoa, and the emigrants arrive in Genoa often some days before the sailing of their ship, all their baggage is now placed in an air-tight compartment on a wooden lighter and subjected to sulphur fumes for twelve hours. There is no provision for the steaming of any baggage in Genoa, and from a conference with the agent of the steamship line I learned that if the steaming of the baggage should at any time be insisted upon by the inspector they would prefer to give up the emigrant business, especially so as already the season is nearly over with them. I consider the work of inspection at Genoa well done.

*Naples.*—Naples was the next port visited and eight days were spent there. It is the most important seaport of Italy and its trade with other Mediterranean ports very great, besides which it is the great depot for emigrants bound to the United States and South America. There are five lines at present engaged in the passenger traffic to the United States, and they employ about twenty-four ships. These lines are the Anchor Line, of Glasgow; the North German Lloyd Line, of Bremen; the Fabre Line, of Marseilles; the Florio Rubatino Line of Genoa, and the French National Line, of Marseilles. In the year 1892 these five lines carried some 38,000 emigrants to New York, the majority of them during the months of March, April, and May. These emigrants are of the peasant class and from the interior portions of southern Italy and Sicily, almost without exception. They do not engage passage from the steamship agents, but from emigrant brokers, as they might be called, who engage with the steamship company to furnish them so many head of steerage passengers, for which the steamship companies pay them a commission.

These brokers bring their people to Naples and keep them at different boarding houses till the day before sailing, when they send them on board the ships in small boats with their baggage. This embarking of emigrants is a slow process, as you can understand, and is accompanied with much inconvenience, especially if it be raining. After all the emigrants are on the vessel she is visited by the Italian commission, three officials of the Italian Government, whose duty it is to prevent criminals from escaping punishment, husbands and fathers from deserting their families, and young men from evading army service. This commission examines the passport of every passenger, and after its work is done the vessel may sail.

You will thus see that the work of inspecting vessel and passengers by the United States inspectors at this port is seriously complicated by these two facts,



the taking off of the passengers in small boats, and the examination on board of all passengers by the Italian commission. The first makes it necessary, if the passengers are to be inspected on shore, that it be done many hours before the ship sails, and the second makes it obligatory to inspect the crew while the passengers are aboard.

At present the steerage passengers are inspected by the United States inspector on the day preceding the sailing of the ship, which sailing is usually at 6 or 7 p. m. They are collected outside of a small building on the water front, admitted to the building a few at a time, inspected by the medical officer, their passports and inspection cards stamped, and then passed to another room where they are vaccinated by an assistant and their inspection cards again stamped. They then go for their baggage and with it are carried in the small boats to the vessel. As they board the ship their baggage is opened and examined, and if passed, a proper tag affixed by assistants of the United States inspector. The next day the crew of the vessel is mustered and inspected and the ship examined when, if found clean, a bill of health is given her.

There are no facilities in Naples for the fumigating or the steaming of baggage, and, should it be required at any time by the inspector, I believe the steamship companies would give up steerage passenger traffic rather than provide such facilities. As the spring emigration is now about over the existing arrangements can not probably be improved upon except, perhaps, to provide a shelter for the emigrant while he is awaiting his turn to be inspected. This, in a slight degree, the steamship companies propose to do. I may add that the Italian Government is erecting a shed on the water front, which will be used, when completed, by the Italian commission for their examination of emigrants, and it may be that the United States inspector can make some use of the building for his purpose.

In the fall of the year there is usually some migration from Sicily to the United States via Palermo; at present there are no passenger ships running there. It would be a comparatively easy matter for the inspector at Naples to visit Palermo on the ship's sailing day and inspect the passengers.

*Marseilles.*—From Naples I journeyed to Marseilles, the largest seaport of France. An extensive trade is here carried on with countries bordering on the Mediterranean Sea and with the East Indies and China, but no passenger traffic is carried on with the United States. The Fabre line of steamers and the French National Line are owned in Marseilles, but they carry all their passengers from Naples. Their first port of departure is often Marseilles, and, as the ship hails from that port, it is assumed that her passengers embark there, but this is not the case. Immigrants reaching Marseilles from other Mediterranean ports are forwarded by rail to Antwerp or Havre, and thence embark for the United States.

The work done at Marseilles consists principally of the fumigation of rags which are destined to United States ports, and these shipments are neither frequent nor very considerable in amount. The fumigation of these rags is, I believe, very complete, all being loosely spread upon racks and exposed for twelve hours. There is absolutely no passenger traffic between Marseilles and United States ports, and very little freight traffic.

With regard to the health of Marseilles it would appear from a study of the reports issued monthly by the health board that there were fewer deaths from all causes during the last three months than for the corresponding period of 1891 and 1892, and the death rate of the city is not large. Many intestinal diseases naturally prevail during the summer months, and it is doubtless true that cases of cholera occur.

Probably there are some cases every year, and probably some at the present time, but I am satisfied that it does not prevail in an epidemic form, and I am further satisfied that as no immigrants or personal baggage are carried from here

to the United States very little danger at the present time is to be feared from this quarter. It is true that a positive diagnosis is not made of many intestinal disorders which occur here during all seasons of the year, and it is also true that accurate and positive information with regard to all such diseases is not within the reach of the United States inspector, but I am not inclined for that reason to assume that doubtful cases are all cases of true cholera. It is much to be regretted that the authorities do not appreciate the importance of careful diagnosis in these cases, and appear to be unwilling to afford our inspector any facilities for obtaining prompt and accurate information.

*Antwerp.*—From Marseilles my journey was continued north across France to Antwerp, the chief port of Belgium. A stay of five days was made here and the result of my observations is as follows:

The passenger business between Antwerp and the United States is entirely in the hands of one company, the Red Star Line, which sends during the summer season two ships per week to the United States. The Saturday ship for New York and the Wednesday ship for Philadelphia.

The Hansa Line, owned by the Hamburg-American Packet Company, of Hamburg, stops at Antwerp usually on Tuesdays of every week during the emigration season, and takes passengers to Quebec. The Red Star Line, through its agent, handles the passengers of the Hansa Line, and it is a member of the steamship pool, which embraces, besides, the lines carrying passengers from Hamburg, Bremen, Amsterdam, and Rotterdam. The Red Star Line does not provide any hotels in Antwerp for the accommodation of its steerage passengers, but it controls at the present time two out of a total of some thirteen which are used in the city as emigrant lodging houses. It has also secured for the summer season the use of a city bath house, in which there exist facilities for bathing sixteen persons at a time, and which is provided with a steam chamber for the steaming of wearing apparel. The steamship company secures business through its own agents and their sub-agents scattered throughout Europe, and instructs its steerage passengers to present themselves in Antwerp two days before the sailing of the ship. On arrival at Antwerp they are met at the stations by the company's men, who, at the present time, conduct those coming from Russia and those coming from Hungary to these two hotels which they control. All others are allowed to go where they please.

The Russians are held at Antwerp for five days at their own expense, during which time they are given a bath at the city bath house (and their wearing apparel steamed while they are in the bath), and their baggage is taken to one of the company's wharves, and there unpacked and hung upon lines stretched across a ship's compartment, when it is steamed for an hour at a temperature of 188° F., the highest point they have as yet reached. At the time of my visit to Antwerp, people coming from Hungary were looked upon with suspicion, and detained and treated in the same manner as were the Russians. It has been the habit to inspect the steerage passengers upon the dock a couple of hours previous to sailing, and as this is most unsatisfactory, both because the time is far too short and because the facilities are in nowise adequate, a very urgent appeal was made to the company, and it was promised that in the future the passengers should present themselves for examination on the day previous to the ship's sailing, when the hour for leaving was in the forenoon, and a suitable building is to be provided in which the examination of both passengers and baggage can be conducted in a careful and thorough manner. The steamship company shows a disposition to furnish any reasonable aid to our inspector in carrying out his instructions, and to that end has prepared plans for a steaming plant with which to disinfect baggage such as the inspector may designate, which plant, when completed, will be all sufficient to do the work required, and superior to anything of the kind that I have seen at

any European port. I assisted at the examination of the steerage passengers of the *Friesland*, leaving June 10, and among them were many Greeks, Poles, Hungarians, Russians, and Syrians, whose personal appearance, at least, could hardly be called prepossessing. The inspection work at Antwerp, I believe, will soon, with the cooperation of the steamship company, be all that can be desired. I was rather surprised to learn that the people of Antwerp do not regard smallpox as a disease particularly to be dreaded. It is treated in the city hospitals as other milder diseases, and at the date of my visit there I saw some sixty-odd cases. It is, however, diminishing since the advent of warm spring weather, which is natural. Vaccination is not compulsory, nor, in fact, very popular, most people having no fear of the disease.

*Rotterdam.*—Rotterdam was the next point visited, being but two hours distant from Antwerp, situated on the Maas, one of the mouths of the Rhine, not many miles from the sea. This is the chief port of the Netherlands, and it enjoys an extensive trade with all parts of the world. One line of steamers carries passengers between Holland and the United States, and this line sails chiefly from Rotterdam, sending two ships per week from that port, and two smaller vessels per month from Amsterdam. This line, the Netherlands-American Steamship Company, has been long established, and is in possession of very extensive wharf property at Rotterdam, on which they have erected large buildings for their freight and passenger business. This property is across the river from Rotterdam proper, and is far removed from the residence part of the city, and quite isolated. Seeing its many advantages to them, the company last year built almost upon its wharves a large hotel in which to properly care for all its steerage passengers until the sailing days, Wednesday and Saturday. This hotel is of brick, well built, and four stories in height, lighted and ventilated in the most approved manner, and with excellent plumbing. The three upper floors are used as dormitories, and each floor has accommodations for 300 people. The first floor is taken up with offices (passengers there obtain their steamer tickets), and the dining room. Excellent wash rooms are found upon each floor, and a bath house has been provided across the street, in which are twelve or fourteen shower baths. The food furnished at this hotel seemed to be of good quality and abundant in quantity, and the price for board and lodging is 48 cents per day. By a rule of the company all steerage passengers must come to this hotel at least thirty-six hours before sailing time, to be properly inspected, ticketed, and listed on the manifest. As the hour for sailing varies according to the tide, and often occurs in the early morning, it has been thought best to have the final inspection of the emigrants on Tuesdays and Fridays, and it has been arranged that our inspector shall have sanitary control of the hotel, and make a daily visit there to examine all those arrived the day before, and to make such disposition of their baggage as he deems necessary.

At the present time all people coming from Russia are detained at the hotel five days, and in the meantime their baggage is steamed in a chamber constructed for that purpose in a building adjoining the hotel. I am convinced that this is thoroughly done, having witnessed the process several times. In view of the fact that at present the passengers from Russia and the Orient are looked upon with suspicion, the steamship company, during my stay in Rotterdam, voluntarily withdrew the sale of tickets to those people and telegraphed such instructions to their agents in Russia and the East. As a result of this hereafter all Russians who come to Rotterdam will be obliged to cross England to reach America. The arrangements for the care and the careful examination of emigrants at Rotterdam are far better than I have yet seen at any other port, and practically the same methods will be adopted as are now in use at the other continental ports where our inspectors are stationed. While at Rotterdam I learned that large numbers of Russians were passing through on their way to Liverpool, there taking steamer for New York or



Quebec. This movement dates practically from the beginning of this year, and, from figures which I obtained from the Holland emigration commissioners, has increased from 165, as the number in January, to 1,766, as the figures for May. In short, some 5,000 Russians thus far this year have passed through Rotterdam for America via England, a movement practically unknown till the present season. The explanation is this: For many years Hamburg has been the port of departure for all Russians, and the forwarding agents for this business all had their headquarters at Hamburg. Many of these agents are Russians, and the city of Hamburg has virtually prohibited foreign steamship agents, or rather forwarding agents, from doing business in Hamburg; so that these same people who formerly did business in Hamburg have now moved to Rotterdam and are forwarding their emigrants via England, as the Rotterdam line has been unwilling to take them at the same rates as some of the English lines. I make this explanation in justice to the Rotterdam steamship people, who are not alone responsible for the increased migration of Russians through Rotterdam. The health of the city of Rotterdam is excellent, and, as I said before, the conditions governing the inspection work there most excellent.

*Southampton.*—The next port visited was Southampton, England, a port of call for the German lines and the regular sailing port of the new American Line.

There are at present but four ships plying regularly between this port and the United States which carry freight and steerage passengers, and these comprise the American Line. This was formerly the Inman Line, owned by the International Navigation Company, which company also owns the Red Star Line, running between New York and Philadelphia and Antwerp. The North German Lloyd and the Hamburg-American ships, some of them, take on and disembark cabin passengers by means of a tender some miles below the city, but they do not handle immigrants or freight. One ship a week is dispatched by the American Line, sailing every Saturday at noon, and on the morning of that day practically all of their passengers, cabin and steerage, are brought down from London, distant 78 miles, by special trains. The steerage passengers arrive at 9:40 a. m. and the cabin passengers at 11:30 a. m. In the steerage are found many from the British Isles and at present many from the Continent, including Germans, Hungarians, and Russians.

The steamship company, instead of providing accommodation for the temporary care of its steerage passengers at Southampton, which is the port of departure, prefers to have them kept at a hotel, known as the "Emigrant's Home," at Blackwall, near London, and to furnish them with a special train to bring them to the ship on the sailing day. This applies to all steerage passengers from the Continent, those from the British Isles coming direct to Southampton from their homes. This arrangement of the steamship company makes it necessary, if the immigrant and his baggage are to be examined properly, that there should be two inspectors, one for emigrants from the Continent who are housed in London, and the other for those who come direct to Southampton.

Since the number of steerage passengers per week is now less than 300, and that number is not likely to be increased before another season, it would appear to me to be most desirable, as far as the work of inspection goes, to have the examinations all made at Southampton, and the detention, if necessary, and steaming of baggage should be directly under the supervision of the United States inspector. That would mean that steerage passengers must come to Southampton at least twenty-four hours before the ship sails, as is the case with practically all the other ports. The steamship company, I am told, intends building a hotel for the coming season which will accommodate their steerage people, but for the present it would appear that existing arrangements must suffice. All steerage passengers are grouped in one of the sheds on the quay soon after the arrival of the train from

London, and as they pass up the gang plank out in the open air they are inspected by the board of trade surgeon and our inspector, who after passing them furnishes them with an inspection card stamped, the name to be filled in by the ship's surgeon on the voyage. Those emigrants who arrive by train from London have been under the observation, for a longer or shorter period, of the inspector there, who under the direction of Dr. Pettus has detained those considered suspicious and boiled their clothing, no means for steaming being at hand. One inspector can not look after people in London and Southampton on the same day, nor can he inspect steerage passengers in London on Fridays, as he must be in readiness all of that day to visit the Hamburg-American ship for the purpose of issuing the supplemental health bill. The character of the emigration through Southampton is generally good, but it would appear that certain classes from the Continent who formerly went to the United States via Hamburg are now going to Southampton in small numbers to take passage on the American Line.

From Southampton my trip was continued to Liverpool, where a stop of several days was necessary.

The emigrant intending to go to the United States from Liverpool has the choice of eight lines of steamers—three to Quebec, one to Boston, three to New York, and one to Philadelphia. The lines to Quebec are the Allan, Dominion, and Beaver, and for the present season the baggage of all their steerage passengers is, under requirement of the Dominion Government, disinfected at Quebec or Point Levis, no matter whether the passenger be from the British Isles or from the Continent. The lines carrying passengers to the United States direct are the Cunard, one ship per week to Boston and one to New York; the White Star, one ship per week to New York; the Guion, one ship every fortnight to New York, and the American Line, one ship per week to Philadelphia. These lines carried last year over 50,000 steerage passengers, but as they all call at Queenstown a considerable percentage of this number embarked there. As a rule these ships carry people from the British Isles and Norway and Sweden, but through an agreement with the Continental steamship lines they also carry many emigrants from the Continent.

These latter reach Liverpool via Rotterdam and Hull or Grimsby, as a rule, though there are many other routes. The various boarding houses in the city harbor all emigrants until sailing day, when they are obliged to present themselves for examination at one of the companies' sheds some hours before the sailing of the ship. Their baggage is brought with them, and they have previously been furnished with a card by the steamship company giving their name and last residence. In these sheds the people and their baggage are inspected, and as fast as passed by the inspector their cards and their baggage labels are stamped. The steamship's people are warned by the inspector of those districts upon the Continent from which emigrants will not be received except after detention and disinfection of their effects, and they are trusted to notify the inspector when they have people from such districts. This seems at present to be the only feasible plan for obtaining this information, though it must be confessed it is open to objections. It is simply impossible to see many of these people or to learn anything about them before they present themselves for examination except through the steamship agents themselves. There are so many companies competing for the business, and there are so many lodging houses, and they are so scattered in various parts of the city, that no concentration of the people is practicable. For the limited amount of baggage at present requiring disinfection, facilities are furnished by two small steam chambers connected with the City Hospital. The steamship people have provided nothing, and the requirement by our inspector of any great amount of work of that kind would lead to a suspension of steerage business at this point. The Canadian lines, I am told, are carrying more than their ordinary number, perhaps because the impression has prevailed that immigrants via Quebec

were not detained at the United States border by immigration officials, as is the case at New York. The vessels engaged in the passenger traffic between Liverpool and the United States are of the best in all their appointments, with most excellent steerage accommodations.

*Glasgow.*—Glasgow, Scotland, was next visited in accordance with cable instructions and these facts ascertained:

Two steamship lines compete for the emigrant-passenger business between Glasgow and the United States, and their American ports are Quebec, Boston, and New York. These lines are the Anchor, which has a weekly ship to New York, and the Allan State Line, which also has a weekly sailing to New York and a fortnightly ship to Boston and a fortnightly (sometimes weekly) ship to Quebec. When business will warrant it the Boston service is weekly also. These vessels, all of them, touch at Londonderry, in Ireland, and take on any passengers offering there, furnishing the most convenient route for emigrants from the northern half of Ireland, as does Queenstown for those from the southern half. The Glasgow lines carry many people from the British Isles, and also large numbers from the Continent, booking them to Glasgow via Hull and Leith. The inspection of these emigrants is made by a local physician in the employ of the U. S. consul at this port, and as there is work enough to demand the undivided attention of one man, I strongly urge that a regular medical officer be detailed for this inspection work. No facilities at present exist for the steaming of emigrants' baggage at Glasgow, but I believe, if it were necessary, suitable arrangements could be made, as both steamship companies have very extensive properties along the river front on which chambers for steaming baggage could be readily placed. The emigrant hotels are widely scattered, but under the control of the companies.

*Hull.*—From Glasgow I journeyed to Hull. Large numbers of continental emigrants are received at this port and forwarded by rail to Liverpool and Glasgow, but none sail direct to the United States. The Wilson line sends a ship once a week to New York, but carries no steerage passengers.

For the purpose of inspecting these vessels of the Wilson line it would be a comparatively easy matter for the medical officer at Liverpool to go to Hull once a week, the journey occupying about four or five hours, or a competent physician could be employed by the U. S. consul. Steerage passengers arriving in Hull from Rotterdam, Antwerp, or other continental ports do not remain at all, but proceed by rail directly across England to the ports on the west coast.

*Queenstown.*—Queenstown, in the south of Ireland, is the departing point for many emigrants since all the Liverpool lines touch there. They are from the country districts of Ireland and assemble at Queenstown on the day of sailing. The consul employs a local physician, who inspects all the people in the consul's office some hours previous to their sailing, issuing to them inspection cards. I am satisfied from personal observation that the work is carefully done, and I do not believe a more satisfactory method could be adopted. I took passage from Queenstown on the *Britannic* and reached New York July 21.

Very respectfully,

W. A. WHEELER,  
*Surgeon Marine-Hospital Service.*

REPORT OF PASSED ASSISTANT SURG. C. E. BANKS, DETAILED BY INVITATION OF THE CANADIAN GOVERNMENT FOR DUTY AT THE CANADIAN QUARANTINE FOR INSPECTION, ETC., OF IMMIGRANTS DESTINED FOR THE UNITED STATES.

QUEBEC, CANADA, August 12, 1893.

To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:

SIR: I have the honor to submit the following report of the work done by myself and assistants at the St. Lawrence quarantines for the season of 1893:



While on special duty at Halifax during the month of April, I received the following telegram:

“WASHINGTON, D. C., April 21, 1893.

“PASSED ASSISTANT SURG. BANKS,

*U. S. Consulate, Halifax, N. S.:*

“Canadian Government has invited me to place an officer at Grosse Isle for the purpose of certifying to disinfecting of baggage for United States. Proceed immediately to Grosse Isle quarantine as representative of this Service. Be prepared to label baggage. Authorized to incur necessary expenditures. If needed, additional officer will be sent. Wire acknowledgment.

“WYMAN,

*“Surgeon-General.”*

I left at once for Quebec, via Portland, Me., where it was necessary for me to make some official and personal preparations for my duties at the St. Lawrence quarantines.

I reached here on the morning of April 27, almost simultaneously with the arrival of the first immigrant steamer. Your directions to “proceed to Grosse Isle” were not complied with because it appeared upon arrival here that the actual work of the season would be done at Quebec and Levis, on opposite sides of the St. Lawrence, and I have made my headquarters at this port accordingly.

The Dominion Government had designated these two places as substations of the official quarantine at Grosse Isle, as will be described below. In consequence of this arrangement the work of disinfection would be progressing in two distinct points simultaneously, and I found it necessary to have an assistant. With some slight intervals I have had medical assistants since May 2, and, in addition to them, two persons to aid in the labeling and tagging of baggage.

#### SANITARY CONDITION OF PORT—QUARANTINE REGULATIONS IN FORCE.

The sanitary condition of Quebec has been excellent during the whole quarantine season to date.

The quarantine regulations in force at this port have been as follows: By an order in council dated April 18, all vessels bringing immigrants to Canada were directed to land the steerage passengers at Quebec (for the Canadian Pacific Railway) or opposite, at Levis (for the Grand Trunk Railway), at which two points, under the directions of Dr. Montizambert, the disinfection of luggage has been done. The following is a copy of the order:

1. During the coming season of St. Lawrence navigation, as a precautionary measure for the protection of Canada from contagious disease, the luggage of every immigrant entering Canada, except that of first-class passengers, by way of the St. Lawrence in vessels not detained at Grosse Isle for the reason of having no sickness on board, shall be disinfected at the point or points hereinafter named.

2. Such disinfection shall be made by the steam process, by the fumes of sulphur, or by the bichloride drench, to the satisfaction of the medical superintendent of the Grosse Isle quarantine station.

3. The certificate given by the quarantine officer at Grosse Isle to vessels inspected at that station shall not be valid until such disinfection shall have been certified to be effective.

4. Such disinfection shall take place at—

a. The Louise Embankment, or

b. The immigrant landing place at Levis in respect to immigrants booked for transport by the Grand Trunk Railway.

5. The whole shall be under the directions of the minister of agriculture, in virtue of the provisions of chapter 68 of the Revised Statutes, entitled “An act respecting quarantine.”

That you may understand the situation, I will explain in detail what constitutes the various plants which are known under the general title of "the St. Lawrence quarantines." They are four, viz:

1. RIMOUSKI.

This is a boarding station near the mouth of the St. Lawrence, where the royal mail is taken off and first-class passengers landed. At the same time a general inspection of the ship is made without detention, and the condition, if unfavorable, is wired to Grosse Isle for information of the regular inspecting officer.

2. GROSSE ISLE.

Grosse (originally Grâce) Isle is 31 miles below Quebec, in the middle of the River St. Lawrence, which at that point is 12 miles wide. The island is approximately  $1\frac{1}{2}$  miles long, a half mile wide, and contains about 700 acres. It was first used by the Dominion authorities as a quarantine station in 1832, when it was administered as such by the military forces of the British Government. In time the actual professional work was placed in the hands of a civil appointee, and then by degrees the military establishment relinquished control to the civil government, and it has now been for many years under the charge of the department of agriculture, forming the principal feature of the several stations known collectively as the St. Lawrence quarantine.

The Grosse Isle quarantine is under the charge of a superintendent and a staff of 21 assistants, constituting the permanent force under normal conditions. The principal officials are Frederick Montizambert, M. D., F. R. C. S., medical superintendent, and Frederick W. Church, M. D., and Joseph V. Côté, M. D., assistants.

The present superintendent has been in charge of the station since 1869, having served three years previously as assistant to a former superintendent. This long service and its practical results are so well known to the sanitarians of America that any words of introduction from me would be unnecessary.

The island itself is well suited for its purposes, being so conformed that it has been readily adapted to the plans of its administrators into the three artificial divisions that exist to-day—the sick, central (executive), and healthy. In fact, the entire sanitary defense of Canada, as her commerce is now carried on, is of an ideal character, being controlled by this one sentinel in her one great water avenue during the summer (the ordinary quarantine season), by which every foreign vessel must pass to reach her great ports, Montreal and Quebec. The three divisions of Grosse Isle will now be considered in turn. (See map.)

*I. Central (executive) division.*—The middle third of the island contains the residence and office of the superintendent, the barracks for the crew and families of the boarding steamer, bakery, stables, and several outbuildings, Roman Catholic chapel and priests' residence, Episcopal chapel and rectory. These two chapels were erected by the Dominion Government for the use of the permanent and temporary residents. The superintendent's office is connected with several points about the island by telephone to facilitate the transaction of business and also by telegraph with Quebec. He receives through the signal and telegraphic service of the Dominion, every morning and evening, reports of the movements of incoming vessels as soon as they are sighted in the Gulf of St. Lawrence or at the mouth of the river, and can thus, many hours ahead, calculate upon their probable arrival at Grosse Isle. This division has a short wharf used by the boats of the station for landing of supplies, residents, and those destined for the sick division. A fine ambulance, constructed after designs by Dr. Montizambert, is in service for this division, and I noted the prompt response to the call for it by whistle from the boarding tug, on the day of my visit, when a patient from a passing ship was brought ashore. All the buildings in this division are well adapted to their purposes.

*II. Sick division.*—This is on the easterly end of the island, and its limits are indicated by a dividing fence and stile, which is guarded by the quarantine police to prevent intercommunication when the division is in commission. The buildings on it consist of a hospital, steward's and orderlies' quarters, cholera lazaretto, barracks for detained relatives of patients, disinfecting buildings, washhouses for hospital and lazaretto, and storehouses. The hospital is a brick building (erected 1879) of two stories, made to accommodate 100 beds. It has four wards of 20 beds each, and smaller rooms for officers or for cases requiring the seclusion of a private ward. The ward furniture consists of iron cots provided with straw bale mattresses which are burned after use. It has the usual administrative, dispensary, and subsistence arrangement and is operated by the usual routine methods familiar to administrators of public institutions. At present there are but three cases in the hospital, all of a temporary and noncontagious character. The floors and inside work are of soft wood, and it is plastered throughout. It is well adapted for the purpose, has light and airy wards, and is sufficiently ventilated.

The cholera lazaretto is a very old wooden building, about 75 feet long, of one story, peak roof, roughly constructed, whitewashed, and at present unfurnished. The other buildings in this division require no extended description. The disinfecting buildings are small wooden structures, used in part as store sheds, of which portions have been fitted up with new board linings and otherwise tightened to secure imperviousness for sulphur dioxide fumigation. A special apparatus for fumigating letters written by patients is a part of the arrangements in this division to prevent the spread of contagious disease. It is probable that several of the old buildings in this section will soon give way to new ones as the modern development of the station progresses. They were built and located at a time when sanitary science was in its formative period, while now a regard for convenience of administration will doubtless bring them into more compact relations, as the developments of our knowledge of the nature of contagion has taught us to deal with it less at arm's length. A crematory furnace for the disposal of bodies of persons deceased from cholera, and other purposes, a small steam sterilizing chamber, and laundry plant for the lazaretto will undoubtedly suggest themselves for this section as it is in turn reached in the evolution of the island from its primitive form of pesthouse to that of a scientific sanitary station.

*III. Healthy division.*—It is gratifying to turn to this section, where the signs of growth are more than evident. Much has already been done here that will give great satisfaction to the health authorities of Canada and the United States, and that which remains to be finished is in such a state of advancement that the practical results could be immediately tested should the emergency arise. The inclemency of the spring, the ice blockade in the river, and the inevitable slowness of contractors have combined to delay the expected completion of contracts which were limited to the first days of May for their expiration. This will account for the numerous statements of what is to be done in the following account of this division:

The principal buildings in this division, which is on the west end of the island, are the steam disinfecting plant, the lavatory, the cabin passengers' hotel, the intermediate and steerage detention barracks, residence of the medical assistant, landing wharf, police headquarters, and sundry storehouses.

*Steam disinfecting building.*—This is a new wooden structure at the shore end of the wharf. Rails with switches are laid upon the wharf leading to the building, and the iron carriages run from the dock to the steam chambers, three in number. These chambers are placed side by side, each 25 feet long by 8 feet 6 inches square. They are constructed of boiler iron, closed at both ends by iron doors, whose shell is also supplied with steam, as hereafter noted. A Knowles vacuum pump operates all three chambers by a system of valves arranged to separate those not in



operation from the one to be used, and when the vacuum has been secured the live steam is supplied by three high-pressure 40-horse-power horizontal steel boilers of a tested pressure of 170 pounds, but certificated to be run at 120 pounds.

The doors are supplied by steam in their shells through special piping leading to them and terminating in 7-ply rubber hose, so that the doors can be opened and shut without the necessity of couplings. The steam chambers are the same as those in use at the Louise embankment and are supplied with pressure gauges and thermometer, and will have electrical contact thermometers and registration dials forthwith to complete the contract. The building is divided laterally to make an infected end in which the articles enter, and a noninfected end from which they are taken out. In the infected end in the second story there are in process of erection twelve baths with shower attachments, to be equally divided for use between the sexes. After the passenger has been personally cleansed he passes to the noninfected end in the same story, over the steam chambers, to receive his sterilized clothes, which have been passed through the chambers while his bath is in progress, or he remains there until his outfit is returned to him in case it consists of but the suit he wears. The building and machinery is in readiness for practical operation although it still lacks a few of the minor details of construction noted above to pronounce it complete. It has a feed pump and large settling tank. Here also is a mercuric chloride tank for drenching wire trunks and containers, and a soapstone tank for articles requiring immersion.

*Cabin passengers' hotel.*—This is a wooden building located on a rocky bluff, 400 feet from the wharf, and is arranged with 54 staterooms, and 11 large rooms to accommodate 128 persons, two beds in a room. It is fitted with bath tubs, wash-out hopper closets, hot and cold water. The arrangements for the kitchen are good, and, with a large assembly or sitting room, warmed by open fireplaces at either end, and a balcony overlooking the St. Lawrence, the saloon passenger whose misfortune it may be to come over on an infected ship will find his lines fallen in pleasant places if he is destined to make a stay at Grosse Isle.

*The lavatory.*—This is an old building which was formerly fitted up with old-fashioned wash boilers surrounding four large chimneys situated equidistant in the interior. One end has been set off for laundry purposes, utilizing the old boilers and set wall tubs of wood when the clothing of the intermediate and steerage is washed. The next compartment has been fitted up by Dr. Montizambert for a bacteriological laboratory, and this room and the succeeding compartments are divided by corrugated galvanized-iron walls 10 feet in height. The space above under the roof being open, access from one room to another or inspection over these walls is prevented by wire netting securely fastened to the top of the iron partitions. The next three divisions in the building are 3 bath and water-closet compartments, 6 baths and 8 closets in each, making a total of 18 tubs of iron porcelain lined, supplied with hot and cold water, and 24 earthenware wash-out closets operated by separate service boxes. These boxes are automatically filled from the water tanks overhead, which are supplied by a steam pump drawing directly from the St. Lawrence a few feet in front of the building.

The main trunk of the discharging sewer is controlled by a gate valve. This was put in by Dr. Montizambert for use in case of the development of a number of suspected or infected cases—cholera or typhoid fever. The gate would be closed, and a disinfecting solution poured down to sterilize the evacuations of the users until it was found to be necessary to scour it out by the accumulation of collected material. All these bath and water closets are built of this corrugated iron sheeting, and the old floors have been covered with smooth galvanized iron, soldered to prevent leakage, dipping toward the center, where small outlets take off surplus drippings to the ground beneath. Three tanks of bichloride overhead in this building have leaders of hose, and the walls and floors can be thoroughly

washed when necessary. It is a most admirable arrangement, and the only wish, not criticism, that one could make about it, is that these modern appliances and improvements could have been put in a building erected for the purpose. It is like "putting new wine in old bottles," and in view of the rapid decay of these wooden structures in this climate, it will probably require constant repair outside to support the interior work properly as time goes on.

*Detention buildings.*—There are eight detention barracks of considerable age, dating back to the early days of the station. They are roughly built, unpretentious shells, whitewashed inside and out, but still showing evidences of their antiquity. Six of them, accommodating 250 persons each, or a total of 1,500, are devoted to the steerage passengers. They are fitted with galvanized-iron adjustable berths, two in a tier, similar to those used by some of the transatlantic lines in their immigrant passenger steamers. A general wash room will be in each building. Two of the detention barracks have been set aside for intermediate passengers, accommodating about 200, and the improvements interiorly are now about completed. They consist of new flooring and subdivision of the space into staterooms made by wooden partitions to the height of the plates, protected overhead by wire netting to prevent intercommunication over the top. Each room has a standing washbowl. A central room for dining is arranged in each barrack. Dry earth-closets for males and females are at opposite ends, the sexes being separated likewise in the assignment of rooms.

These barracks are not well located, being in low ground, and thus incapable of drainage whenever a water-supply system becomes an accomplished fact on the island. But it would seem that it would not be wise to expend a large sum of money in putting modern plumbing into buildings which can not last long at best, and when they come to be rebuilt, as they must, they will be undoubtedly relocated with reference to drainage facilities.

*Water supply.*—Unfortunately for the completion of this finely-arranged station, it has no artificial water supply. Water for potable or other purposes is now drawn from dug wells, and for laundry purposes from the river. But it is gratifying to add that the Dominion government has instituted measures to provide for this deficiency. Two artesian wells are now being driven, the contractor arriving the same day as myself, and he has engaged to drive 1,000 feet to reach water, for potable purposes principally. In addition to this, two Worthington pumps have been set up on the wharf. They deliver river water to a 50,000-gallon tank on an eminence in the healthy division through a 4-inch pipe, and thence it will be distributed to the buildings in that portion.

As an auxiliary supply, a condenser and aëerator in the boiler building at the head of the wharf purifies the river water for potable purposes, of the capacity of 2,000 gallons per day. "Pasteur" filters are supplied to each building.

*Deep-water wharf.*—Another pressing need of the station is a deep-water wharf to which the large steamers can come and be docked when infected. At present the passengers would have to be transferred by one of the steamers belonging to the station, and if the weather happened to be stormy it might cause serious delay. Dr. Montizambert has recommended this improvement to his Government, but it has not yet been acted upon.

*Steamers.*—There are two vessels, viz:

First, *Challenger*: She is the regular boarding and inspecting boat, and is of the following dimensions: Eighty-eight foot keel; 93 feet over all; draft, 7.6 feet; 18-foot beam; tonnage, about 96. She is of the seagoing tug type, and is a model boat for the purpose, similar to the United States quarantine steamer *Foster*. She has been fitted with a small hospital room for removal of noninfectious cases from vessels not required to be kept in quarantine. She has a steam-disinfecting

attachment for disinfecting the ship's hospital from whence the case is taken, and a mercuric chloride sprinkler for completing the work of disinfection.

Second, *Druid*: A side-wheel steamer, 160 feet long, temporarily transferred from the department of marine and fisheries to the quarantine service. She has a large mercuric chloride tank for drenching infected vessels, a sulphur blast furnace on deck for fumigating ship's hospitals, the holds and cargoes of vessels, and is used for a supply steamer and to land the passengers and effects of infected vessels on the island for quarantine detention. She is not entirely suited to the work, being a side-wheel boat, which makes her an awkward craft to run alongside of other vessels for disinfection purposes.

*General remarks.*—Comment upon such an elaborate plant as that above described must be of a favorable nature, and congratulations can be extended to the Government which has equipped it and to the guiding spirit of it all, who has, through a long service, brought it to its present efficiency. Although much remains to be done to complete the plans of Dr. Montizambert, yet the work is so far advanced that it can be clearly seen what the completed plan will be before another season ends.

An additional medical assistant has been appointed this year to increase the efficiency of the staff, thus relieving Dr. Montizambert of ordinary routine duties, as his own work has been materially increased this season in the supervision of the disinfecting stations at Quebec and Levis.

I was shown a small inclosure on the island, of about 2 acres, in which were buried between June and September, 1847, the bodies of 5,424 persons, the victims of typhus fever. They were refugee immigrants fleeing from the famine in Ireland in 1847 only to find a grave in America.

### 3. LOUISE EMBANKMENT (QUEBEC).

The general work of disinfecting the luggage of noninfected vessels carrying immigrants has been done at this point during the present season, with the exception of those treated at Point Levis, as will be explained below. The Louise Embankment is an immense artificial basin, built of granite, projecting into the St. Lawrence, on which the Dominion government has erected the immigration buildings and on which the deep-water terminus of the Canadian Pacific Railway is laid to meet the transatlantic passenger traffic. At this place all the immigrants booked for transportation by this railroad disembark, and here the Dominion government has caused to be erected and set in place, under the direction of Dr. Montizambert, a complete disinfecting plant, constructed after the latest modern designs and improvements in maritime sanitation. The principal piece in this plant is an iron steam chamber 8.6 by 8.6 by 25 feet, having an estimated capacity of 24 average trunks.

It is provided with a pressure gauge, thermometer, registration dials, and when ready for use is exhausted by a Knowles vacuum pump. It has the usual wire cages operated on roller carriages, and the luggage goes in at one end, and after disinfection is removed at the other, where it is labeled with a baggage tag prepared for use, with a punch to designate the place, time, and kind of treatment given. The next portion of the plant is the sulphur dioxide chamber, where leather, fur, and similar goods are treated. It is provided with wire racks, and is fed by a furnace, a cooling receiver tank, and a Sturtevant blower. The next portion of the plant is the mercuric bichloride tank, of a capacity of 500 gallons, which is used for spraying the rooms after a ship's load has been treated, and for cleansing and disinfecting boxes, chests, etc. Supplementary to this the attendants apply the same solution (1-700) to the containers with a large flat brush from a supply in buckets.



## 4. POINT LEVIS.

This place is directly opposite the city of Quebec, on the south side of the St. Lawrence River, and is the terminus of the Grand Trunk Railway, the competitor of the Canadian Pacific Railway for the immigrant traffic to the northwest. As soon as the passengers disembark at the Louise Embankment those booked for the Grand Trunk are separated, with their baggage, and transferred by a steamer across the river to the terminal dock at Point Levis. This dock is a long L-shaped structure, easily isolated from the shore, if necessary, and is similar to but smaller than the one at Quebec.

The Grand Trunk officials secured permission from the government to disinfect their own passengers at this point, provided they would prepare an apparatus satisfactory to Dr. Montizambert. These officials have constructed a steam disinfecting plant in two box cars, provided with steam coils for heating the interior to a point above  $100^{\circ}$  C., and then live steam is introduced from a stationery boiler, and the same process is enacted as at Quebec, minus the vacuum and the pressure. The containers are rinsed outside with the mercuric chloride, as previously described, and a car has also been prepared for sulphur fumigation, supplied by the combustion of the rolls in kettles placed within. This plan has the approval of Dr. Montizambert, and is operated, like the others, under his direction and the supervision of assistants.

## STEAMER LINES TO QUEBEC.

There are five regular lines of passenger steamers sailing to Quebec from European ports, viz:

Allan, weekly, Liverpool via Moville; Dominion and Beaver, both weekly. Liverpool direct; Allan, weekly, Glasgow direct; Hamburg-American Packet Company, weekly, London, Hamburg, and Antwerp.

Statement of steavage passengers landed at the port of Quebec during the months of May, June, and July, 1893, bound for the United States.

## MAX.

| Steamships. |               | Adults. |         | Children. |         | No. of souls. | Nationalities. |        |         |         |               |                     | Occupations.     |        |          |                   |            |         | Total. |            |                 |       |
|-------------|---------------|---------|---------|-----------|---------|---------------|----------------|--------|---------|---------|---------------|---------------------|------------------|--------|----------|-------------------|------------|---------|--------|------------|-----------------|-------|
| Name.       |               | Male.   | Female. | Male.     | Female. |               | English.       | Irish. | Scotch. | German. | Scandinavian. | French and Belgian. | Other countries. | Total. | Farmers. | General laborers. | Mechanics. | Clerks. |        | Domestics. | Not classified. |       |
| 1           | Lake Huron    | 63      | 20      | 16        | 9       | 108           | 20             | ---    | ---     | 9       | 56            | 7                   | 19               | 2      | 4        | 38                | 19         | 1       | 10     | 35         |                 |       |
| 2           | Sardinian     | 204     | 83      | 15        | 35      | 337           | 55             | ---    | ---     | 15      | 261           | ---                 | 6                | 22     | 8        | 106               | 14         | ---     | 45     | 88         |                 |       |
| 3           | Pickhuben     | 218     | 160     | 55        | 72      | 505           | 6              | 1      | ---     | 364     | 140           | ---                 | 13               | 22     | 9        | 130               | 15         | 2       | 7      | 280        |                 |       |
| 4           | Lake Winnipeg | 42      | 11      | 1         | 1       | 55            | 6              | ---    | ---     | 6       | 28            | ---                 | ---              | 2      | 2        | 23                | 8          | ---     | 5      | 35         |                 |       |
| 5           | Toronto       | 138     | 30      | 18        | 21      | 207           | 20             | ---    | ---     | 26      | 77            | 31                  | 53               | 4      | 14       | 120               | 1          | ---     | 8      | 207        |                 |       |
| 6           | Sarmatian     | 304     | 88      | 40        | 30      | 462           | 15             | ---    | ---     | 393     | 465           | 8                   | 63               | 3      | 25       | 337               | 1          | 1       | 45     | 113        |                 |       |
| 7           | Labrador      | 382     | 137     | 55        | 31      | 605           | 41             | ---    | ---     | 29      | 465           | 7                   | 63               | 8      | 25       | 558               | ---        | ---     | 65     | 158        |                 |       |
| 8           | Laurentian    | 445     | 196     | 64        | 68      | 773           | 17             | 4      | 5       | 49      | 529           | 29                  | 145              | 1      | 104      | 340               | ---        | 111     | 217    | 773        |                 |       |
| 9           | Hibernian     | 2       | 1       | ---       | 2       | 5             | ---            | ---    | ---     | ---     | ---           | ---                 | ---              | ---    | ---      | ---               | 1          | ---     | ---    | 3          |                 |       |
| 10          | Lake Superior | 78      | 24      | 3         | 9       | 110           | 21             | ---    | ---     | 3       | 61            | 8                   | 17               | ---    | 1        | 51                | 17         | ---     | 14     | 18         |                 |       |
| 11          | Stubenhawk    | 273     | 153     | 71        | 69      | 566           | 63             | 8      | ---     | 399     | 167           | ---                 | ---              | 20     | 25       | 228               | ---        | 22      | 56     | 271        |                 |       |
| 12          | Parisian      | 261     | 118     | 47        | 34      | 460           | ---            | ---    | ---     | 389     | ---           | ---                 | ---              | 10     | 53       | 108               | ---        | 56      | 143    | 460        |                 |       |
| 13          | Buenos Ayrean | 235     | 123     | 35        | 37      | 480           | ---            | ---    | 1       | 38      | 325           | ---                 | 116              | 5      | 200      | 200               | ---        | 50      | 145    | 480        |                 |       |
| 14          | Wandbram      | 256     | 110     | 56        | 66      | 488           | ---            | ---    | ---     | 359     | ---           | 129                 | ---              | 4      | 34       | 200               | 18         | ---     | 213    | 488        |                 |       |
| 15          | Sarnia        | 155     | 15      | 26        | 12      | 208           | 4              | ---    | ---     | 21      | 143           | ---                 | 40               | 5      | 110      | 110               | ---        | 19      | 213    | 488        |                 |       |
| 16          | Lake Nepigon  | 67      | 18      | 15        | 6       | 106           | 5              | ---    | ---     | ---     | 95            | ---                 | 6                | 20     | 25       | 25                | 20         | ---     | 53     | 208        |                 |       |
| 17          | Vancouver     | 205     | 63      | 24        | 22      | 374           | 17             | 1      | ---     | 8       | 307           | ---                 | 41               | 8      | 40       | 216               | 2          | 27      | 82     | 374        |                 |       |
| 18          | Circassian    | 215     | 100     | 37        | 25      | 377           | 14             | 1      | ---     | ---     | 348           | 8                   | 6                | 2      | 51       | 160               | 1          | 24      | 118    | 377        |                 |       |
| 19          | Baumwall      | 333     | 107     | 56        | 55      | 541           | 40             | ---    | ---     | 230     | ---           | 305                 | ---              | 6      | 95       | 215               | 6          | 1       | 194    | 541        |                 |       |
| 20          | Lake Ontario  | 214     | 44      | 29        | 7       | 294           | 40             | ---    | ---     | 31      | 95            | 2                   | 126              | 6      | 10       | 190               | 14         | 23      | 57     | 294        |                 |       |
| 21          | Pomeranian    | 1       | 1       | ---       | ---     | 2             | ---            | ---    | 2       | ---     | ---           | ---                 | ---              | ---    | ---      | 1                 | ---        | ---     | 1      | ---        |                 |       |
| 22          | Numidian      | 349     | 136     | 56        | 44      | 647           | 16             | 1      | ---     | 68      | 484           | 9                   | 69               | 4      | 50       | 290               | 5          | 94      | 204    | 647        |                 |       |
| 23          | Slavonia      | 245     | 109     | 61        | 54      | 469           | 13             | ---    | ---     | 284     | 10            | 162                 | ---              | 10     | 27       | 200               | 8          | 25      | 199    | 469        |                 |       |
| Total       |               | 4,785   | 1,909   | 780       | 705     | 8,179         | 359            | 14     | 50      | 1,951   | 4,066         | 1,014               | 725              | 125    | 830      | 3,677             | 148        | 5       | 701    | 2,663      |                 |       |
|             |               |         |         |           |         | 8,179         |                |        |         |         | 8,179         |                     |                  |        |          | 830               | 3,677      | 148     | 5      | 701        | 2,663           | 8,179 |

## JUNE.

|    |              |     |     |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |
|----|--------------|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 24 | Oregon       | 272 | 58  | 57 | 33 | 420 | 12  | --- | --- | 52  | 285 | 9   | 62  | 40  | 5   | 2   | 146 | 420 |
| 25 | Manitoba     | 7   | 6   | 4  | 2  | 19  | --- | --- | 4   | 15  | --- | --- | --- | 1   | 1   | 3   | 9   | 19  |
| 26 | Lake Huron   | 55  | 25  | 14 | 6  | 92  | 8   | --- | --- | 14  | 70  | --- | --- | 39  | 1   | 13  | 24  | 92  |
| 27 | Sardinian    | 284 | 142 | 42 | 40 | 508 | 22  | 4   | --- | 6   | 425 | 4   | 47  | 225 | 17  | 84  | 140 | 508 |
| 28 | Carthaginian | 4   | 1   | 0  | 6  | 11  | --- | --- | 11  | --- | --- | --- | --- | 3   | --- | --- | 7   | 11  |

## JULY.

|       |               |       |       |     |     |       |     |     |       |     |     |       |     |     |       |     |     |       |       |
|-------|---------------|-------|-------|-----|-----|-------|-----|-----|-------|-----|-----|-------|-----|-----|-------|-----|-----|-------|-------|
| 23    | Toronto       | 139   | 21    | 24  | 19  | 203   | 2   | 17  | 81    | 11  | 92  | 203   | 1   | 19  | 113   | 6   | 6   | 53    | 203   |
| 30    | Lake Winnipeg | 42    | 10    | 9   | 4   | 65    | 16  | --- | 27    | --- | 22  | 65    | 5   | 5   | 31    | --- | --- | 1     | 65    |
| 31    | Labrador      | 288   | 72    | 77  | 44  | 481   | 20  | --- | 424   | --- | 35  | 481   | 5   | 70  | 210   | 3   | 25  | 163   | 481   |
| 32    | Mongolian     | 282   | 142   | 75  | 62  | 541   | 36  | 5   | 386   | 28  | 85  | 541   | 7   | 69  | 185   | 57  | 57  | 222   | 541   |
| 33    | Lake Superior | 46    | 26    | 8   | 2   | 82    | 5   | --- | 49    | --- | 8   | 82    | 2   | 8   | 32    | 4   | 8   | 28    | 82    |
| 34    | California    | 205   | 105   | 36  | 42  | 448   | --- | 100 | ---   | 64  | 284 | 448   | 7   | 39  | 210   | 1   | 15  | 108   | 448   |
| 35    | Sarnia        | 5     | 7     | 1   | 0   | 13    | --- | 13  | ---   | --- | --- | 13    | --- | --- | 3     | 2   | --- | ---   | 13    |
| 36    | Parisian      | 271   | 165   | 51  | 42  | 529   | 41  | 12  | 457   | 13  | 1   | 529   | 7   | 50  | 214   | 62  | 62  | 196   | 529   |
| 37    | Pickhuben     | 201   | 112   | 51  | 52  | 416   | 20  | 227 | 73    | 7   | 116 | 416   | 14  | 16  | 156   | 3   | 23  | 132   | 416   |
| 38    | Sarnia        | 132   | 28    | 25  | 4   | 216   | 3   | 21  | 130   | --- | 38  | 216   | 2   | 24  | 97    | 9   | 3   | 81    | 216   |
| 39    | Lake Nipigon  | 36    | 18    | 4   | 13  | 71    | --- | --- | 57    | --- | 1   | 71    | 2   | 3   | 29    | --- | 1   | 34    | 71    |
| 40    | Vancouver     | 129   | 45    | 26  | 24  | 224   | 14  | 2   | 202   | --- | 6   | 224   | 20  | 23  | ---   | 3   | 18  | 224   | 224   |
| 41    | Laurentian    | 212   | 134   | 54  | 43  | 443   | 17  | 18  | 374   | 8   | 27  | 443   | 6   | 30  | 176   | --- | 69  | 162   | 443   |
| 42    | Lake Ontario  | 58    | 11    | 11  | 11  | 105   | 7   | 19  | 76    | 3   | --- | 105   | 1   | 10  | 47    | --- | 47  | 105   | 105   |
| 43    | Polaris       | 196   | 113   | 58  | 42  | 409   | 9   | 244 | ---   | 71  | 85  | 409   | 11  | 17  | 159   | 2   | 26  | 187   | 409   |
| 44    | Pomeranian    | 2     | 2     | --- | --- | 4     | --- | 4   | ---   | --- | --- | 4     | 2   | --- | ---   | --- | --- | 2     | 4     |
| Total |               | 2,906 | 1,257 | 619 | 518 | 5,300 | 230 | 18  | 3,043 | 301 | 919 | 5,300 | 110 | 471 | 2,237 | 58  | 30  | 1,973 | 5,300 |

|       |               |       |       |     |     |       |     |   |     |       |    |       |       |     |     |       |    |    |       |       |
|-------|---------------|-------|-------|-----|-----|-------|-----|---|-----|-------|----|-------|-------|-----|-----|-------|----|----|-------|-------|
| 45    | Numidian      | 238   | 144   | 62  | 62  | 506   | 24  |   | 6   | 250   | 6  | 220   | 506   | 14  | 36  | 188   |    | 84 | 184   | 506   |
| 46    | Oregon        | 138   | 42    | 25  | 27  | 232   | 4   |   |     | 209   |    | 19    | 232   | 4   | 12  | 122   |    | 21 | 73    | 232   |
| 47    | Lake Huron    | 24    | 14    | 10  | 5   | 53    | 16  |   | 17  | 20    |    |       | 53    |     |     |       |    | 1  | 28    | 53    |
| 48    | Stubenhauk    | 186   | 156   | 106 | 92  | 540   | 37  |   | 261 | 11    | 16 | 252   | 540   | 39  | 14  | 120   | 3  | 29 | 328   | 540   |
| 49    | Sardinian     | 168   | 130   | 61  | 37  | 386   | 20  |   | 281 | 282   | 7  | 73    | 386   | 8   | 21  | 138   | 1  | 53 | 175   | 386   |
| 50    | Lake Winnipeg | 21    | 3     | 3   | 2   | 29    | 3   |   | 14  | 6     |    |       | 29    |     |     |       |    |    | 8     | 29    |
| 51    | Toronto       | 43    | 10    | 9   | 4   | 66    | 1   |   | 20  | 57    | 3  | 4     | 66    |     | 8   | 21    | 5  | 2  | 21    | 66    |
| 52    | Grimm         | 107   | 87    | 46  | 23  | 263   | 2   |   | 87  |       |    | 174   | 263   |     | 8   | 87    | 2  | 26 | 131   | 263   |
| 53    | Manitoban     | 2     | 4     |     |     | 8     |     | 5 |     |       |    |       | 8     |     |     |       |    | 3  |       | 8     |
| 54    | Labrador      | 129   | 57    | 24  | 18  | 228   | 41  | 2 | 15  | 124   | 9  | 37    | 228   |     | 10  | 112   | 1  | 1  | 88    | 228   |
| 55    | Mongolian     | 127   | 107   | 34  | 41  | 309   | 11  | 1 | 2   | 201   | 1  | 93    | 309   | 3   | 13  | 108   | 2  | 34 | 147   | 309   |
| 56    | Baumwall      | 76    | 65    | 33  | 38  | 312   |     |   | 95  |       | 10 | 107   | 212   | 4   | 11  | 50    | 9  | 2  | 118   | 312   |
| 57    | Lake Superior | 34    | 21    | 1   | 11  | 74    | 28  |   | 10  | 36    |    |       | 74    |     | 4   | 26    | 6  | 18 | 31    | 74    |
| 58    | Siberian      | 2     | 1     | 1   | 1   | 5     |     | 5 |     |       |    |       | 5     |     | 2   | 3     |    | 7  |       | 5     |
| 59    | Parisian      | 181   | 99    | 40  | 35  | 355   | 80  | 3 |     | 172   | 4  | 96    | 355   | 10  | 12  | 159   |    | 45 | 129   | 355   |
| 60    | Slavonia      | 96    | 56    | 38  | 37  | 227   |     |   | 169 |       | 20 | 38    | 227   | 13  | 5   | 70    | 7  | 1  | 116   | 227   |
| 61    | Sarnia        | 52    | 20    | 6   | 3   | 81    | 11  |   |     | 51    |    | 19    | 81    |     | 3   |       |    | 15 | 19    | 81    |
| 62    | Vancouver     | 72    | 24    | 22  | 16  | 154   | 20  |   | 6   | 128   |    |       | 154   | 28  | 10  | 28    | 1  | 5  | 66    | 154   |
| 63    | Laurentian    | 125   | 66    | 23  | 22  | 236   | 8   |   | 9   | 172   | 6  | 41    | 236   | 24  | 33  | 70    |    | 35 | 74    | 236   |
| Total |               | 1,821 | 1,126 | 551 | 476 | 8,974 | 269 | 6 | 712 | 1,719 | 82 | 1,176 | 8,974 | 152 | 202 | 1,400 | 42 | 29 | 1,739 | 8,974 |



## IMMIGRATION STATISTICS.

Nearly 30,000 immigrants have passed the St. Lawrence quarantines this season to August 1, viz: May, 13,653; June, 9,095; July, 6,808; total, 29,556. Of this number 17,453 were destined for the United States according to the compilations of the immigration bureau at this port. To the minister of the interior, who has charge of this branch of the public service, and to Mr. P. Doyle, the superintendent of the office at Quebec, I am indebted for the statistics which accompany this report in respect to the volume, character, nationality, and sex of the immigration passing through this place.

From observation and some computations at different times, it is a safe calculation to reckon between two and three pieces of luggage for each immigrant, and it may be approximately estimated that about 70,000 pieces have been steam disinfected in the three months covered by this report. Based upon this, about 45,000 pieces have been inspected and tagged by myself and assistants and about 15,000 personal certificates issued to the immigrants for the information of inspectors on the border.

From the first I used the ordinary commercial shipping tag for affixing to the disinfected luggage, my assistants tying it on after the process was completed. Later my attention was called by the manufacturers to the lead seal and wire attachment used by the Department of Agriculture by inspectors of meat for affixing their certificates. After a trial I was so favorably impressed with it that I ordered a supply at once. As soon as the Dominion authorities saw it, the minister of agriculture, who has charge of the quarantine, immediately directed its adoption for their stations, and it is used now by them and myself in affixing our certificates of disinfection. It is a safeguard against fraudulent substitution, loss of the tied tag, and, while as easy of application, has an "official" appearance that is not the least recommendation.

There have been no special difficulties to overcome. The work here being done by the Dominion Government in a most thorough and scientific manner, has left no room for criticism. The duties of my assistants and myself have therefore been largely routine, confined to attendance at the arrival of steamers, general inspection of the immigrants, and observation of the process of disinfection, and when finished, the issuance of certificates and the tagging of baggage. With an occasional instance here and there, sometimes from loss of certificate, or sometimes from the failure of the immigrant to get one, through ignorance, a few have been detained at the border for investigation. In most cases, as far as I can learn, these persons had either lost my certificate, or, as stated, had failed to procure one. Among the thousands this was inevitable, but the border States, with the exception of Michigan, have honored the work done at the St. Lawrence quarantines at its face value. The Michigan State board of health early in the season began to interpose petty restrictions upon travel, and even went to the unnecessary trouble of putting the luggage through a sulphur fumigation in order to comply with some of its rules. But the absurdity of it was so evident that after enforcing it for a few weeks and delaying trains, this unreasonable obstruction was allowed to pass into "innocuous desuetude." For the past six weeks or more there has been no interference or failure to accept the certificates of disinfection issued here.

During my service here I have been the recipient of the greatest courtesies from the officials of the Dominion Government with whom I have had dealings. I ought first to acknowledge my deep obligations to Dr. Frederic Montizambert, F. R. C. S., the superintendent of the St. Lawrence quarantines, for many official kindnesses. I have been afforded every facility for the performance of my duties. The officials of the two railroads, the Grand Trunk and the Canadian Pacific, have been uniformly courteous and helpful to my assistants and myself, assigning rooms in their buildings and furnishing them for our use.

The immigrant officials, particularly Mr. Doyle, the superintendent, should be mentioned as having been of material aid to us. The U. S. consulate has been, by the favor of Hon. Frederic M. Ryder, the present incumbent, my headquarters, and I am indebted to him for more than the usual courtesies of his office.

My assistants, Dr. William G. Stimpson, of this Service, who was with me for two months, and Dr. Irving C. Rosse, of Washington, have performed their duties promptly and to my entire satisfaction.

Very respectfully,

CHAS. E. BANKS,  
*Passed Assistant Surgeon, M. H. S.*

REPORT OF PASSED ASSISTANT SURG. J. H. WHITE, DETAILED FOR DUTY AT  
HAMBURG.

HAMBURG, GERMANY, *August 1, 1893.*

*To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:*

SIR: In compliance with orders contained in Bureau circular of July 6, 1893, I beg to submit the following report of service at Hamburg from April 1 to July 31, 1893, inclusive.

Arriving here March 29, 1893, and finding regulations to have been so posted as to take effect April 4, 1893, I devoted the interim to seeing such things as might be of value in connection with the work here.

Assistant Surg. Rosenau, then here, rendered me much aid and gave much information in this line. Together we visited the Stadt disinfectionens Anstalten, the barracks for emigrants, the public water-boiling establishments, and the private sulphur disinfection places, all of which will be described later.

I also visited the hotels and boarding houses where emigrants from noninfected localities were and still are housed. There were thirty-seven of these houses, and while some of them were not at all what one could call first-class houses, they were for the most part clean, and for the class they accommodated very good—some of them were excellent.

None of them had, however, any means for disinfection of people's luggage, and very few indeed had any bath arrangements.

The people from infected localities were housed in barracks built by the Hamburg American Packet Company in the spring of 1892, and consisting of a long, low, shed-like building, containing sleeping accommodations in double tiers for about 100 people in each of the eight subdivisions.

When first visited these barracks, I should say, held upward of 1,200 persons; consequently they were overcrowded, and certainly they were dirty. It could not be otherwise, for there are exactly six bath tubs and one small steam disinfecting chamber, this latter about 225 cubic feet capacity, and no laundry arrangements at all to provide clean bodies, sanitary clothing, and clean clothing for such an assembly.

This institution, under the charge of a police inspector of Hamburg, has, since the strain of overcrowding was removed, in May last, done very good work indeed; before then they simply could not, try they ever so hard.

The people presenting themselves for embarkation from barracks then were very dirty, and large numbers of them were lousy, both as to heads and bodies. Now such is not the case, and, though many are still dirty, none are lousy, all having had their bath and proper attention paid to such heads as contained vermin.

Again, it is a source of satisfaction that the danger of an outbreak of any disease of contagious nature is now so minimized, and with only 300 to 400 people on his hands, the barrack's surgeon, Dr. Kierstein, is enabled to eradicate many trivial skin diseases which hitherto time did not allow him to reach.

Altogether these barracks (which have been at the suggestion of Surg. Wheeler provided with a wash shed for the encouragement of cleanliness, where also the apartments to be occupied at night are emptied during the day, and *vice versa*) send up for examination on the day of sailing a far more decent class than formerly, and for the few people now going do very well.

The plan pursued in the inspection of emigrants is practically the same to-day that I found to exist upon my arrival here, to wit:

At a time set by the company, usually two or three hours preceding the sailing of the ship, all emigrants are gathered at a building on the Elbe known as the Passagiere Hallen. There they are passed in defile before Dr. W. L. Homann, police surgeon, who examines in the interest of Hamburg; Dr. George W. Nash and formerly Dr. Ed. Müller, in the pay of the Hamburg American Packet Company, and lastly, one of my assistants and myself.

It can not be claimed that this is a thorough examination; it is only approximately so; and while many cases of all sorts, even including hernia, are discovered and some rejected, many more must pass entirely unobserved.

Wishing to make as few innovations as possible at first, I only introduced a card printed in semblance of an American ensign, upon which a certificate signed by myself was also placed asserting that the bearer was inspected and passed. Each card bore its specific number, and by this device I numbered the people until I later received the registration punch.

This card was finally superseded by the card issued now under the immigration law, which latter I supply in blank to the company, who issue the same, and they are stamped by my assistant as I pass the emigrant at the final inspection with my name and the date of the inspection.

While I see ample room for a vast improvement in my inspections of both persons and baggage, I can not possibly put my views into execution, except it be when such barracks are provided as will enable me to pursue the same admirable plan now pursued by Passed Assistant Surg. Woodward at Rotterdam.

Such barracks the company have promised to construct, and I have the pleasure to submit a plan of the same herewith and to state that they promise to build at once if the necessary formal consent is given by the senate of Hamburg.

Upon my arrival I found that no examination or disinfection of luggage whatever was being done, and this very question has been and still continues one of the chief difficulties of this post.

Little by little I have succeeded in improving this part of the work, and although there is an iron lighter lined with wood to prevent radiation and supplied with steam by a tug now set apart for this work we can barely attain 100° C. therein, and can not be assured that we attain that uniformly over the whole lighter.

This again will be set right by the construction of adequate barracks.

As to inspection of ships and their crews, I found that Consul W. R. Estes had designated Dr. W. L. Homann to inspect the crew of each vessel; no one was appointed to inspect the vessel.

Soon after I entered upon my duties certain masters of vessels complained to me that they felt it a hardship that they must pay Dr. Homann \$5 for the inspection of crew and Consul Estes \$2.50 for certifying the same, when I was also inspecting for the United States.

Upon their seeming to blame me for this I represented these facts to Consul Estes in a note, in which I informed him that, feeling myself competent to perform the duties which I was ordered here to do, I felt that I must state to him, for my own protection, that he, if continuing Dr. Homann's examinations, did so of his own volition.

There is an inspection of food supply for passenger steamships made here in each case by the Hamburg authorities, and, as my inspection on this point can



only amount to an approximate knowledge of this matter, I have fortified myself of late by obtaining from these gentlemen (the "Auswanderer Behörde") a sworn statement of the quantities of each article delivered on board in their presence.

I inspect the vessel as to all requirements of the law in case of passenger ships, and in case of freighters sometimes I also inspect, but for the most part I am compelled to relegate these to my assistant, Dr. J. T. Mitchell.

The inspection of freighters, and more especially British vessels, has been fraught with a great deal of difficulty, as these vessels make no effort to have their crew ready, and have, I am positive, many times substituted men from ashore for absent members of the crew, making my inspection thereby a farce.

As to inspection and disinfection of merchandise, I can not do better than append a circular compiled from the quarantine law and regulations.

At the suggestion of Consul Estes some portions of the law were copied verbatim, and he signed the circular with me.

This circular was printed in both German and English, and was widely circulated among shipowners, shippers, *spediteurs*, and merchants.

#### REVISED CIRCULAR.

For the more convenient inspection of vessels, their cargoes, and crew, when bound for any port in the United States, it is desired that all shipowners and shippers will observe the following requirements, which are necessary under the new quarantine law of the United States, now in force.

Notice must be given to the consulate in each case in writing of the sailing date and place of departure seventy-two hours before sailing, and facilities for inspection furnished the medical inspector.

All vessels at any foreign port clearing for any port or place in the United States shall be required to obtain from the consul, vice-consul, or other consular officer of the United States at the port of departure, or from the medical officer where such officer has been detailed by the President for that purpose, a bill of health, in duplicate, in the form prescribed by the Secretary of the Treasury, setting forth the sanitary history and condition of said vessel, and that it has in all respects complied with the rules and regulations in such cases prescribed for securing the best sanitary condition of the said vessel, its cargo, passengers, and crew; and said consular or medical officer is required, before granting such duplicate bill of health, to be satisfied that the matters and things therein stated are true.

"Any vessel clearing and sailing from any such port without such bill of health and entering any port of the United States shall forfeit to the United States not more than \$5,000.

"The bills of health herein prescribed shall be considered as part of the ship's papers, and when duly certified to by the consular officer or other officer of the United States, over his official signature and seal, shall be accepted as evidence of the statements therein contained in any court of the United States.

"Preliminary to the issue of such document the vessel shall be inspected by the consular or medical officer.

"The quarantine officer shall at once after a vessel's arrival in a port of the United States demand from the master the prescribed bill of health. Should the vessel have no bill of health, she shall be detained and the fact reported at once to the collector of customs."

As far as possible a classification of cargo in accordance with list below will be observed, and shippers are notified that a compliance with the requirements given in each case is necessary to the furnishing of a bill of health and consular invoices.

*Class A.*—Requires neither inspection nor disinfection, if properly cased to prevent moisture incident to shipment, and consists of:

All new and dry textiles (wool, cotton or linen), musical and scientific instruments, new furniture, ales, wines, liquors, live animals, cane and rattan ware,

books and printed matter, china, glass, porcelain, precious stones and jewelry, fancy goods, toys, art goods, grains, plants and seeds, India and hard rubber, ivory, leather and leather goods, manure salt and kainit, metal, metal goods and hardware, explosives, Portland cement, salt, silks, tobacco and cigars, and such others as may be added hereto from time to time by the medical inspector of the U. S. Government. This class applies to absolutely new goods only.

*Class B.*—Shipping permits must be obtained from medical inspector in all cases for articles belonging to this class, which is subject always to inspection, and, if need be, disinfection—decision resting with the undersigned. This class should therefore be listed if possible three or four days prior to sailing in order that no delay may be caused the shipper or the vessel.

Sugar of all kinds, coffee, bristles, feathers if new, horse and other animal hair, unmanufactured wool, canned food stuffs of all kinds, dextrine, dried fruits and vegetables, eggs and albumen, fresh fruits, moss and moss litter, rags, jute, gunny, rawhides and skins, rennets, guts, and bladders, wood pulp and cellulose. All secondhand goods without exception, and all others not included in Class A or Class C.

*Class C.*—Articles which are forbidden entry into the United States while any infectious or contagious disease exists in Europe.

Secondhand goods, such as upholstered furniture, feather beds, down quilts, clothing, except such as may be personal wearing apparel, accompanying owner.

It is desired (and the cooperation of shipowners and merchants is earnestly solicited in this direction) to increase the scope of Class A as much as possible, and to this end the careful and cleanly packing to secure dryness is solicited.

The disinfection in Class B, when required, will consist of steam when the same can be used, and articles which can be passed without disinfection from this class will be passed. Consular authentication of the origin of such goods from a non-infected locality will greatly facilitate such passing free and often obviate even an inspection.

Sugar and coffee under most circumstances will not be molested in the least.

The attention of passenger steamers is particularly called to Class C, which is principally intended to cover the dirty and dangerous household effects of steerage passengers, and it is requested that all such agencies be notified not to allow shipment to Hamburg of such matter, as the shortest way to stop this class of goods.

Shipowners and brokers will be required to present to the medical officer the manifest of the cargo of all vessels sailing for ports in the United States before the clearing of such vessels and the bill of health will not be issued until the medical inspector has satisfied himself as to the good sanitary condition of the cargo.

Goods shipped through the United States in transit to other countries are subject to the same regulations.

The object of this circular being to expedite commerce and not to delay, all shippers are earnestly requested to furnish invoices promptly, so that no delay may ensue.

This circular supersedes the one issued by the undersigned on April 4, 1893.

W. R. ESTES, *U. S. Consul.*

J. H. WHITE,

*Passed Assistant Surgeon M. H. S., Medical Inspector.*

In this connection I would say that finding a large amount of so-called disinfection being done, which was in my opinion not needed, and therefore an unnecessary check on commerce, I began to pass certain articles under a certificate that I considered them of a noninfectious nature, to wit: New clippings, new cotton waste, limed glue stock, limed cow hair, scoured wool (as distinguished from

washed wool), absolutely dry hides, arsenicated dry hides, salted hides, salted guts in casks, dry rennets, dry albumen, and other similar goods, many of which were being put in original unopened packages into a room with a pot of sulphur and fumigated for six hours, and then given a certificate of thorough disinfection by a chemist.

This was surely both a farce and a fraud, and not wishing to be a party to either I declined to accept such certificates as evidence of disinfection.

Upon the subject of difficulties encountered and how overcome, I beg to be allowed to speak of these under the headings to which each belongs.

When, on May 29, it was officially reported that a sporadic case of cholera had occurred in Hamburg, I did not deem it necessary nor just to say that the city was infected, and subsequent events have justified that opinion, but, looking to the possibility that other cases might occur and quarantine restrictions be necessary, I consulted with the packet company as to what plan they could offer in such an event. They proposed that the *Scandia* should be placed at Brunshausen, a place on the Elbe 16 miles below this city, and be used as a floating barracks, which plan I accepted and cabled the same to the Department. Nothing more in the way of cholera occurring, however, that plan was never resorted to.

As to the present sanitary condition of the city of Hamburg, I may say that it is exceptionally good in all but one or two points.

The water supply, which was formerly one of the worst in Germany, if not indeed the very worst, is now very good indeed, and, though drawn from one of the foulest of rivers, it is so cleansed by filtration as to be of very fair quality, and in the light of recent developments, showing cholera bacilli in the river and none in the water after filtration, it would seem that there is ample ground for the assertions of Professors Koch and Dunbar, that the sand-filtration system now used by Hamburg and the same used before by Altona, is absolutely destructive of the said germs.

The water works, situated upon an island in the Elbe, about 2 miles above the city, draw the water from the Elbe itself at a point below low-water mark (tides rise and fall some 8 feet), and after it has passed several screens for removal of all heavy dirt and trash it is pumped into one of the sedimenting basins, of which there are four, having a capacity of 78,500 cubic meters each.

Here the water stands twenty-one hours, and is then allowed to flow of its own gravity into the filtration basins, of which there are eighteen completed and four under construction.

These basins are immense shallow pans, with sides and bottom water-tight; sides inclining outward at about 45°.

At the bottom, and immediately overlying the outlet openings, is a layer of cobblestones of about 20 cm. thickness. Overlying this a layer of very coarse gravel of 20 cm. thickness; above this another 20 cm. of finer gravel, and finally a top layer of fine clean sand of about 1 meter in thickness.

This material is all carefully washed in large revolving drums provided with jets of water, to remove all earthy and soluble constituents.

The water from the sedimenting basins is allowed to enter at the top of these filters and to enter very slowly, rate of speed being regulated by a very ingenious contrivance in the way of a flood gate, which closes itself when the water rises too rapidly.

Water stands 1 meter deep all over the filter and passes through the filtering medium at a speed of 63 mm. per hour—no more, no less—as it is claimed by the director of the Hygienic Institute that any greater speed would possibly destroy the efficiency of the filtration.

Leaving the bottom of the filters the water enters the city mains, where it loses any further interest in this connection.



The markets and marketmen are all under police control, and samples of any articles offered by them which the sanitary police consider objectionable are at once submitted to the Hygienic Institute.

The streets and lanes of the city are very carefully policed and kept in a most excellent condition.

So much, however, can not be said of the fleets or canals in the old part of Hamburg. They present at low water a hideous assortment of garbage, and, although their pollution is strictly forbidden, it still goes on. Another point is that they are filled by the Elbe, and the Elbe is full of sewage.

As to the sewers of the city, I can only say that they are considered excellent.

Assistant Surg. Rosenau having reported upon them already, any further report would be superfluous.

Plumbing is not at all up to modern ideas here, and there is therefore ample room for the sanitary inspection of the same, which I understand is to be instituted.

The Hygienic Institute, under the able direction of Prof. Dunbar (through whose courtesy I saw the water works), has done great good and will do more in the future, as under its direction the good points in the sanitary condition of the city will be accentuated and the bad eliminated.

Daily inspections are there made of the water in the river and in the water works. Experiments looking to the rendering of sewage innocuous are now in progress. Dr. Dunbar examines the stools of all suspicious cases, I believe, in person.

This Institute is also a school of instruction in bacteriology for all official physicians of the city.

The disinfection establishments existant in Hamburg may be divided into three classes:

(1) The Anstalten of the city, consisting of two establishments, each provided with two small steam cylinders (stationary) and another on wheels. These do excellent work and can be always relied upon. (2) The steam apparatus at the emigrant barracks, before mentioned, and the lighter of the packet company for baggage, also previously mentioned. (3) The sulphur disinfecting plants, of which there are several for disinfection of rags and feathers only, and which, being watched by my inspectors, I can assert to be good, as far as sulphur fumigation is good.

Then there are the private establishments, whose certificates I rejected because they fumigated the outside of barrels, etc.

I do not believe such disinfection deserving the name.

As regards rags, the article of all others shipped hence most to be watched, and the disinfection of same, I beg to submit below an exact copy of a letter on the subject written to Consul Estes by Consul-General W. H. Edwards, of Berlin, which expresses very fully and with force exactly the ideas I myself entertain on this subject:

“CONSULATE-GENERAL OF THE UNITED STATES,

“*Berlin, May 9, 1893.*

“W. R. ESTES, Esq.,

“*U. S. Consul, Hamburg.*

“DEAR SIR: In reply to your letter of the 6th instant I beg to inform you that you do not understand my position with regard to the rag business.

“I am most decidedly of the opinion that the disinfection of rags should take place at the seaports where the rags are put on board ship for shipment to the United States, and not at inland consulates.”

“Besides, I go a step further, and hold that the disinfection of rags should take

place under the supervision of the officers detailed from the U. S. Marine-Hospital Service, and that the shipment of rags to the United States should be restricted to those ports where we have such officers on duty.

"My reasons for this belief are as follows:

"No consular officer can possess any personal knowledge or possibly obtain any positive proof as to the origin of rags.

"He must at all times seek his evidence as to origin from the rag shippers.

"Whilst, on the one hand, they are usually very fertile in their declarations to the effect that the rags shipped were gathered in districts where quarantinable diseases do not prevail, they proceed, on the other hand, to assure consular officers, when demands are made for original bills showing place and time of purchase, that it is quite impossible to supply such proof, because the rags have, in the process of collection, passed through so many hands that it is quite impossible to trace their origin.

"No sort of an investigation undertaken by any consular officer can accurately trace or positively determine the origin of rags.

"In respect to the origin of rags consular officers are at the mercy of the rag shippers.

"Positive evidence or legal proof as to the origin of rags is narrowed down to what is practically whatever the shipper finds it convenient to say upon that subject.

"When you consider the fact that rag gatherers are constantly at work in every village on the Continent collecting for the principal dealers and shippers in the large cities of the Continent, you must admit that it is practically impossible for even a shipper to truthfully declare where the rags were collected.

"To illustrate, one bale when finally packed at Berlin for our markets may contain a thousand rags collected from a thousand different districts in Austria, Russia, and Germany.

"In view, therefore, of the fact that consular officers can not in any case obtain positive proof as to the origin of rags intended for our markets, I am of the opinion that the disinfection and shipment of rags should be restricted to those ports where we have representatives of the U. S. Marine-Hospital Service on duty.

"Every bale should be disinfected under their supervision and treated as if it came straight from an infected district.

"Most truly,

"W. H. EDWARDS,

"*Consul-General.*"

I could not more explicitly treat the rag question than Consul-General Edwards has above done, and will simply add my unqualified assent to every word of his letter.

The vessels sailing hence for the United States solely as freighters are of all kinds of rig and of every nationality.

They are all duly inspected, as before stated, by my assistant or myself in compliance with the law, and no bill of health is issued until the freight manifest is produced and the character of cargo clearly seen and compared with the shipping permits issued by me, and the crew also duly inspected.

To personally see all the cargo is not only unnecessary but absolutely impossible, as I can well illustrate as follows:

There left this port in one day recently four vessels carrying an average of over 3,000 tons freight each, making a total of not less than 12,000 tons cargo, which one man, or even ten, could not inspect, and even did he do so it would be only the outside of packages that he could see.

These vessels are slow, as a rule, and very few carry more than a crew of 25 men,

so that besides the fact that an impending outbreak of any disease on one of them would become a reality before they reached an American port, the small number of people makes them easy to handle, and I feel, consequently, fully justified in devoting most of my time after a careful supervision of freight invoices to the next class, viz, the passenger steamships.

There are two lines of steamships which carry passengers to the United States from Hamburg.

1. The Hamburg American Packet Company, which dispatches regularly two steamers a week to New York, one to Boston or Baltimore, one to Canada, with emigrants bound overland to the Western States of the United States.

2. The Sloman Line, which, with a fleet of four steamers, carries on in conjunction with the packet company what is known as the Union Line, each company sending a ship alternately once a week.

This makes from four to five steamers per week carrying emigrants.

The fast steamers or "Schnell dampfers" of the packet company, the greater part of the "Post dampfers" of same line, and the whole of the Sloman steamers, are well ventilated and have a sufficient air space, but there are some exceptions, as in the case of ships like the *Moravia* and *Rugia*, the ventilation and air space are interfered with by numerous wooden partitions put up so as to divide the steerage compartments into spaces for 16 to 20 persons each instead of 150 to 250 or more, for which they were originally intended.

Aside from interfering with ventilation these partitions increase the chances for accumulation of filth from not overclean people who occupy them.

Each of these ships is duly inspected by the authority of the German Empire and the Hamburg senate as to food supply, air space, and ventilation.

I inspect these in person as before stated.

So far as cleansing, food, and water supply is concerned I have no fault to find, and as to ventilation, I believe it to be all that is needed on all but two or three, and on most of them exceptionally good.

So much for the passenger ships. Of the passengers themselves, and of the way in which they are of necessity handled and inspected, I am sorry so much can not be truly said.

An earnest endeavor has been made to have all baggage inspected, and, where necessary, disinfected by steam, and I have employed to this end a competent young man whose sole duty is to do this work, and so cause no delay or inconvenience to the steamship companies.

The iron lighter for steam disinfection was prepared at my request.

A circular was issued to all the subagents of the company, requesting them not to send any baggage of the forbidden sorts, viz, old feather beds, down quilts, etc.

I refused to accept such goods as baggage, and a vast mass of it has accumulated here, which, if not disinfected and shipped, will be taken out of the hands of the company sooner or later, and then, having all the ports of Europe from which to select an unguarded door, will find shipment, and not only shipment but entry into the United States. In view of these facts I deplore the refusal of the Department to allow me to carry out my suggestion to disinfect and ship them from Hamburg.

The question of baggage is, in my opinion, a far more serious one than rags or any other, with which we have to deal, and the one least appreciated by the steamship companies.

The emigrant himself, after reaching the United States at the end of a ten, twelve, or fourteen days' journey, may be supposed to be free from disease, but we have absolutely no guaranty that his baggage may not subsequently infect both him and his neighbors.

I would here beg to call attention to the request in my letter of July 20, 1893,



in which I suggested that the collectors of customs be requested to refuse entry to any baggage not bearing the consular or medical officer's stamp, showing it to be harmless in the opinion of said officer. I would state once more that such a ruling would do much, very much, toward giving us good control of baggage.

Under present conditions much so-called hand baggage goes aboard the steamers and is never seen by my inspector or myself.

Bathing the people and disinfecting body clothing is now not done at all except at the barracks, where it is fairly well done, as before stated.

Bath tubs are not considered a common necessity among the class of boarding houses taking emigrants, and the emigrant himself most often has a decided aversion to soap and water, and in many instances really has never had in his whole life but one full bath, viz, the day he was born.

Insist as one may, he can not have people bathed in houses devoid of tubs and when the people themselves have a decided repugnance to bathing.

Up to and including May, 1893, Hamburg was the favorite port of embarkation for Russians, Poles, and Galicians, the former people constituting at least half of the number leaving here for America.

These are the people for whom the present barracks were built, and these are the people who filled the steerage of the steamship *Normannia* on her unfortunate voyage in August, 1892.

While not desiring to discriminate against any particular people, candor compels the assertion that these are as dirty a people and altogether as undesirable from a sanitary standpoint as I have ever seen.

The better class of people, from Germany, Austria, and Denmark, in the main, are very well provided for in the boarding houses and hotels so long as no cholera exists in Hamburg, and are people who are not, in my opinion, very likely to carry the disease at all for exactly the same reasons that prevail with first cabin passengers.

The total number of emigrants passing inspection at my hands has been as follows:

During April, 6,975; May, 5,878; June, 5,040; July, 3,175; total, 21,069.

A very decided decrease will be noted during July and can easily be explained by the statement that the Hamburg senate had then begun to enforce their decree debaring all of the Russian Jews from entering Hamburg.

I append a statement compiled from the abstracts of bills of health for May, June, and July past.

I give none for April, because the data at my disposal are so imperfect as to render such a statement of no statistical value.

*Transcript of abstract of bills of health during the months of May, June, and July.*

## MAY.

| Destination of vessel. | Passenger steamers. | Freighters. | Steerage passengers. | Baggage inspected. | Baggage disinfected. |
|------------------------|---------------------|-------------|----------------------|--------------------|----------------------|
| New York .....         | 12                  | 3           | 5,238                | 443                | 109                  |
| Boston .....           | 2                   | 1           | 410                  |                    |                      |
| New Orleans .....      |                     | 2           |                      |                    |                      |
| Philadelphia .....     |                     | 4           |                      |                    |                      |
| Baltimore .....        | 1                   | 1           | 230                  | 41                 | 7                    |
| Smaller ports .....    |                     | 11          |                      |                    |                      |
| Total .....            | 15                  | 22          | 5,878                | 484                | 116                  |

*Transcript of abstract of bills of health during the months of May, June, and July—Continued.*

## JUNE.

| Destination of vessel. | Passenger steamers. | Freight-ers. | Steerage passengers. | Baggage inspected. | Baggage disinfected. |
|------------------------|---------------------|--------------|----------------------|--------------------|----------------------|
| New York .....         | 13                  | 7            | 3,635                | 2,027              | 536                  |
| New Orleans .....      |                     | 4            |                      |                    |                      |
| Baltimore .....        | 1                   | 2            | 302                  | 130                | 54                   |
| Boston .....           |                     | 1            |                      |                    |                      |
| Philadelphia .....     |                     | 2            |                      |                    |                      |
| Canada .....           | 4                   |              | 1,104                | 360                | 158                  |
| Smaller ports .....    |                     | 6            |                      |                    |                      |
| Total .....            | 18                  | 22           | 5,041                | 2,517              | 737                  |

## JULY.

|                     |    |    |       |       |     |
|---------------------|----|----|-------|-------|-----|
| New York .....      | 13 | 5  | 2,146 | 1,999 | 233 |
| Boston .....        | 2  | 1  | 66    | 16    | 2   |
| Philadelphia .....  | 1  | 4  | 202   | 87    | 35  |
| Baltimore .....     | 1  | 4  | 178   | 68    | 17  |
| New Orleans .....   |    | 4  |       |       |     |
| Canada .....        | 5  |    | 583   | 134   | 35  |
| Smaller ports ..... |    | 6  |       |       |     |
| Total .....         | 22 | 24 | 3,175 | 2,304 | 322 |

In view of the great difficulties attending the carrying out of a quarantine of five days where there are inadequate barracks accommodations or none at all I would suggest that steamship companies, one and all, might have their attention called to the fact that their business may be stopped outright at any moment, and so impelled to erect suitable barracks and give such control of the same to consuls or medical officers as may enable them to see that the laws are fully carried out.

Very respectfully submitted,

J. H. WHITE,

*Passed Assistant Surgeon M. H. S.*

REPORT OF PASSED ASSISTANT SURG. P. M. CARRINGTON, DETAILED FOR DUTY  
AT BREMEN, GERMANY, AND MARSEILLES, FRANCE.

U. S. MARINE-HOSPITAL SERVICE,

*Bremen, Germany, August 10, 1893.*

*To the Surgeon-General U. S. Marine-Hospital Service,  
Washington, D. C. :*

SIR: In accordance with instructions contained in your circular letter of the 6th of July, 1893, I have the honor to submit the following report of the transactions of the service at the port of Bremen from May 25, 1893, to July 31, 1893. When I arrived in Bremen the new quarantine regulations had already been put in operation by the U. S. consul, Dr. H. M. Starkloff, and many of the difficulties of their execution had already been overcome. There had been a lack of facilities for efficient disinfection, but about the time of my arrival a steam disinfecting plant was completed by the North German Lloyd Steamship Company, and all baggage requiring it is now disinfected by steam. During the cholera epidemic of 1892 Dr.

Starkloff instituted an examination of emigrants and employed Drs. Peltzer and Hahn, who were paid by the Steamship Company, through the consul, to conduct the examinations. These gentlemen are still so employed, and with their assistance I examine the emigrants the day before sailing, each one being at the same time vaccinated by the ship's surgeons, two of whom are present for that purpose. At this examination a control card is issued to the emigrants, and Drs. Peltzer and Hahn stand at the entrance to the railroad station the following morning to see that only those having cards pass to the cars. This control card was formerly issued as an evidence of physical examination and vaccination. Having been superseded for this purpose by the United States inspection card, its use is continued as a control card, as stated, and the ship's surgeons are instructed to take it from the emigrant during the voyage. A special train, leaving the station at 6.30 a. m., takes the passengers to Bremerhaven, where I again inspect them and stamp their tickets as they pass through one of the baggage halls of the steamship company to the tender which conveys them to the steamship. The ship is inspected and the crew mustered before the emigrants are allowed to come on board, and the cabin passengers, who come on a later train, are inspected as they cross the gang plank.

It is important that steamers should reach Southampton and pass through the English Channel in daylight, and in order to accomplish this they must take advantage of the tide and cross the bar before the passengers have arrived; the journey from Bremerhaven to the steamship and return consumes considerable time, and so, practically, the whole day is spent in the expedition of one steamer; rarely steamers take their departure from the wharf at Bremerhaven. The sailing days are Tuesdays, Thursdays, and Saturdays, and on the other week days my time is fully occupied in the examination of emigrants and their baggage. The sanitary condition of the port is good, and the death rate for the period embraced in this report has been about equal to an annual death rate of 18 per 1,000 of population. Many deaths are caused by phthisis pulmonalis but notwithstanding the large number of emigrants who pass through Bremen but few cases of contagious and infectious diseases occur. The streets are the cleanest I have ever seen, and great care is taken to keep them in proper order. The water supply is derived from the river Weser, above the city, and is filtered before being distributed to consumers; it is clear and palatable, and is believed to be as wholesome a water as it is possible to obtain. The quantity is ample for all purposes. The water supply of Bremerhaven, which is supplied to all vessels, comes from natural springs in the country, and is good, pure water.

The emigrant boarding houses and hotels are under the control and supervision of the emigrant bureau of the police department and the police surgeons; cases of contagious diseases are transferred at once to the hospital, and the bedding, etc., sent to the public disinfection station, where they are disinfected by steam. I have observed the disinfection as done at this place, and it is efficient. There is now in process of construction a very complete bathing and disinfection plant, and when it is finished all emigrants from infected or suspected localities will be bathed and disinfected there. This will be required by the Bremen authorities as well as by the United States quarantine regulations. Bremen is lacking in one very essential particular, a good sewerage system, but steps are being taken now to supply this deficiency, and it is expected that the new system will be in operation within a year. At present the pail and cistern systems are in vogue. The pails are removed, under cover, and the cisterns emptied into covered receptacles at stated intervals, and the excreta so carried into the country and used as fertilizers. Only vessels carrying passengers clear from Bremen; all freighters clear from Bremerhaven and receive bills of health from the U. S. consular agent there, and I have had



to deal only with the steamships of the North German Lloyd Steamship Company with a single exception, the chartered steamship *Red Sea*. The Lloyd steamers are single-screw iron vessels, well ventilated and lighted, and great care is taken to keep them in first-class condition. After each voyage they are thoroughly cleansed in every part and the steerage washed with creolin; new mattresses, cotton blankets, and tinware for the tables are supplied each voyage, the old articles being destroyed or given to the emigrant. The food supply of all vessels is inspected and certified as to its quality and quantity by a state commission, and I, in inspecting the ship, also inspect the food supply in the storerooms. The usual number of vessels sailing each week is three, and the sailing days Tuesday, Thursday, and Saturday; occasionally there are four, and rarely five sailings in one week. The directors of the steamship company have shown a disposition to cheerfully comply with the United States regulations and they have given a cordial support to all measures proposed. They are rather proud of their record of last year and anxious to duplicate it this year. In regard to the steamship *Red Sea* I wish to say that she was inspected by myself, and, as she had recently come from a suspected port, ordered to be disinfected; the disinfection was done under my personal supervision by bichloride of mercury—1 to 800. Additional ventilators were ordered, as well as the construction of water-closets and a hospital. Dr. Starkloff and I inspected her after the alterations were made, and together inspected the passengers, crew, ship, and food supply on the day of sailing.

The steerage passengers were as good as the average from Russia, and the ship was in first-class condition. All the baggage for this steamer was disinfected by steam in the most approved manner, and it was a source of satisfaction to us that in spite of the newspaper criticism she entered New York Harbor with no case of sickness on board. The detention for five days of emigrants from localities known to be, or suspected of being, cholera infected has been required; the steamship directors, realizing the value of this precaution, will not knowingly ship an emigrant from such localities until he has been so detained, and it is also a matter of self-interest on the part of the hotel-keeper to see that the people are detained, so it has been an easy matter to govern the detention. In order to have the emigrants bathed it was necessary to notify keepers of hotels that unless they provided facilities for bathing their passengers, such passengers would not be accepted; this notice was issued by Dr. Starkloff and myself, and the local emigration officials told the boarding-house keepers in my presence that no emigrants would be assigned to those houses which failed to comply with said notice; the result has been that all the hotel-keepers have had bathrooms built, and the people now appear at the medical examination in a much more cleanly condition. With the assistance of the emigration officials disinfection of the body clothing of the emigrants is now made at the public disinfection station. The baggage of detained emigrants is disinfected at the Lloyd baggage room by steam; the packages being opened, the articles hung up in the apparatus, and exposed to a temperature of 104° C. to 110° C. The baggage of certain cabin passengers has also been subjected to this disinfection. Owing to the long journey and the difficulty of bringing baggage, the Russians have, as a rule, very little baggage, and the large number of pieces shown in this report as having been disinfected is due to the fact that all the hand baggage is included. The emigrants shipped from this port come chiefly from Germany, Finland, Norway-Sweden, Denmark, Russia, and Austria-Hungaria. Those from Germany, Finland, and Norway-Sweden and Denmark I consider the best physically, as well as from a sanitary standpoint; the Russians and Hungarians seem to be the least desirable. The Russian Jewish emigrants are extremely orthodox, and will only eat the flesh of animals which have been killed in accordance with the rules of their religion; in consequence they eat little or no meat, and are, as a rule, badly nourished.

The Hungarians, on the other hand, eat anything offered them, and are in much better physical condition than the Russians.

Exact statistics of the nationality of emigrants are not obtainable, though I have made every effort. I estimate that during the past two months the proportions have been about as follows:

|   | Per cent. |
|---|-----------|
| Germans .....                               | 40        |
| Scandinavians .....                         | 15        |
| Austro-Hungarians (including Galicia) ..... | 20        |
| Russians .....                              | 15        |

All other nations, including a few Roumanians, Australians, and Americans who travel in the steerage .....

The total number of steerage passengers sailing from this port during the period May 25 to July 31, inclusive, was 27,475.

Merchandise shipped from this port consists largely of new goods from the interior of Germany, as toys, linen and cotton goods, rice, tobacco, cement, cheese, beer, wine, etc. Those articles of merchandise which require disinfection usually come with consular certificates of disinfection. Goods originating here and requiring disinfection are generally of the class which may be disinfected by steam, and the disinfection is done at the public disinfection station or at the Lloyd baggage hall, usually the former. Shipping permits are issued for all merchandise, and such as may require it are ordered to be disinfected before the permit is granted. The ship's manifest is examined before the steamer sails in order to see that only goods are shipped for which permits have been granted. No rags have been shipped from this port since I have been here.

*Condensed abstract of bills of health.*

| Number of vessels inspected. | Crews. | Passengers. |           | Detained<br>five days<br>or longer. | Baggage.        |                   |
|------------------------------|--------|-------------|-----------|-------------------------------------|-----------------|-------------------|
|                              |        | Cabin.      | Steerage. |                                     | In-<br>spected. | Disin-<br>fected. |
| May 4 .....                  | 443    | 278         | 3,703     | -----                               | 216             | 115               |
| June 17 .....                | 2,511  | 828         | 14,074    | 4,021                               | 4,685           | 9,897             |
| July 14 .....                | 2,359  | 1,052       | 9,698     | 1,747                               | 6,396           | 6,045             |
| Total .....                  | 5,313  | 2,158       | 27,475    | 5,768                               | 11,297          | 16,057            |

NOTE.—The records of detained persons and the baggage are not complete, owing to the fact that arrangements for keeping said records were not completed for some days after my arrival.

The shipment from noninfected ports of emigrants from infected localities would be rendered safer if all steamship companies were required to establish suitable barracks with complete arrangements for bathing and disinfection, where such emigrants could be completely isolated and kept under observation for the required time, under the control of consular or medical officers.

I think the various steamship companies would establish such barracks if they were notified that upon failure to do so in a certain time no emigrants from infected localities would be accepted as passengers on their steamships.

While this is being written I am informed that the Lloyd Steamship Company have issued an order to their agents and subagents to accept no more passengers from Galicia and those districts in South Russia where cholera prevails so extensively. They also inform me that they will take no persons suffering with *favus* except such as have prepaid tickets.

In closing it is only proper to say that I have received the cordial support and

assistance of Dr. Starkloff in the performance of my duties; by combining our energies we have perhaps been able to accomplish more than would have been possible for either alone.

Very respectfully, your obedient servant,

P. M. CARRINGTON,

*Passed Assistant Surgeon, Marine Hospital Service.*

U. S. MARINE-HOSPITAL SERVICE,

*Bremen, Germany, August 15, 1893.*

*To the Surgeon-General, U. S. Marine-Hospital Service, Washington, D. C.:*

SIR: I have the honor to report as follows concerning my service at the port of Marseilles, France, from May 3 to May 20, 1893: My time was principally occupied in supervising the disinfection of rags and skins intended for shipment to the United States. The disinfection was by sulphur, 6 to 8 pounds to 1,000 cubic feet in an almost air-tight apartment; the exposure never less than twelve hours. The disinfection of rags was going on every day that I was in Marseilles, but none were shipped during my service there, although I disinfected a ship (Italian bark) preparatory to the reception of a cargo of rags the day before my departure. Several attempts to avoid the regulations relating to the disinfection of wools, by shipping via Liverpool, were discovered and reported to the medical officer at that port. Bills of health were issued to only a few vessels (4 or 5), and but one of these carried passengers. Forty-three steerage passengers were examined; one was rejected on account of favus and refused passage by the steamship company. Notice was given the various steamship companies just before I left Marseilles that vaccination of crews and passengers would be required before granting bills of health, and this was enforced on the only vessel sailing after said notice was issued and before I left. As the items from the bills of health which I issued will doubtless be included in the report of the officer now on duty at Marseilles, I have not attempted to include them in this report. The sanitary condition of the port during this period was perhaps as good as it ever is in Marseilles. A show is made of cleaning the town in the principal business portions, but in those portions where cleanliness would have been most desirable no attempt was made to remove the garbage and other filth, which in some sections was sickening. The sewers are open and foul odors of great variety greet the nostrils of pedestrians at every corner. The water supply I never considered above suspicion.

Mr. Trail, the American consul, gave me all the assistance in his power.

Very respectfully,

P. M. CARRINGTON,

*Passed Assistant Surgeon, Marine-Hospital Service.*

REPORT OF PASSED ASSISTANT SURG. L. L. WILLIAMS, DETAILED FOR DUTY AT  
LIVERPOOL, ENGLAND.

U. S. MARINE-HOSPITAL SERVICE,

*Liverpool, England, August 12, 1893.*

*To the Surgeon-General, U. S. Marine-Hospital Service, Washington, D. C.:*

SIR: In compliance with official order of July 6, 1893, I have the honor to submit the following report on the sanitary inspection of ships and passengers at this port for the period ending July 31, 1893:

I arrived in this city April 22, 1893, but did not assume charge of the inspection service for several days, contenting myself in the meantime with observing the method of inspection instituted by Consul Thomas H. Sherman and obtaining such information in regard to the shipping as I could procure. The method which



I found in force was adopted by me and carried out, with some modification, until the receipt of Department Circular No. 65.

The provisions of the ship were inspected several days before the date of sailing and while they were being placed on board. On the day of sailing I boarded the vessel, in company with the local port officials, and inspected the crew and second-cabin and steerage passengers, who were mustered on deck and caused to pass singly in review. The saloon passengers came on board several hours later. The manner of inspecting the latter was for some time a matter of contention, as the steamship companies were naturally fearful of offending a class of travelers from whom most of their profits are derived. It was finally agreed that they should be inspected as they passed on board from the tender, visitors being excluded from the latter.

On the receipt of Circular No. 65 it was posted in the consulate for the prescribed period, and its provisions enforced from and after May 28. From this date the inspections of steerage passengers have taken place on shore in the company's dock sheds. Blank cards for the emigrants and labels for their baggage are issued to the steamship companies. All the baggage belonging to the emigrants examined at any one time is stacked up in the inspection shed, forming a corral, in which the emigrants are placed. They are passed out singly through a gangway and examined. The place of last residence, as shown on the card, is noted, and, in the case of emigrants claiming residence in Great Britain but suspected of coming from the Continent, they are questioned, and when practicable their statements are verified. Very often it is impossible to verify these statements, and herein lies a source of fallacy, as erroneous statements as to residence may be prompted by irresponsible agents.

After the emigrant has been passed his ticket is stamped and returned to him. All suspicious cases are turned aside for further examination, which is made at the conclusion of the general inspection. When any persons are rejected or detained, their effects are removed from the mass of baggage and set apart for disinfection. The remainder is then stamped and turned over to the steamship company for shipment. No parcel of baggage is opened unless the sanitary history of the owner is unsatisfactory. All freight ships and their crews are also examined before bills of health are issued. Owing to the great extent of the water frontage of the port and the magnitude of the commercial operations with the United States, it early became apparent that a single inspector could not cope with the work. This fact was communicated to the Bureau, and on May 13 Sanitary Inspector C. W. Bailey reported for duty under orders from the Surgeon-General. A clerk was also employed to stamp tickets and baggage and superintend the disinfection of emigrants' effects.

It occasionally becomes necessary to employ an additional medical inspector when several vessels clear from the port at the same time. This is unavoidable, as the movements of the shipping depend on the tide. In compliance with instructions from the Bureau, Sanitary Inspector Bailey has during the past month been detailed to proceed once a week to Hull for the purpose of inspecting the Wilson Line ship which sails every Friday or Saturday from that port for the United States.

The sanitary condition of the city during the present year has been satisfactory. Enteric fever and the eruptive fevers of children exist as in other large cities, and a few cases of smallpox and typhus fever may almost always be found in some of the overcrowded slums. The latter diseases never assume epidemic proportions, and the cases as they arise are efficiently dealt with by the sanitary authorities. Each case, as soon as discovered, is removed to an isolation hospital and the infected premises emptied and thoroughly disinfected. The city is clean and well paved and possesses an excellent water supply. Owing to these conditions cholera,

if introduced, is not likely to spread. Outgoing ships carrying passengers are inspected by the medical officers of the board of trade. This consists in an inspection of the food supply, the second-cabin and steerage passengers, and the ships' hospitals and steerage compartments. Vessels entering the harbor from infected or suspected ports are boarded by the port sanitary officer and the condition of passengers and crew ascertained. Masters of vessels are compelled by law to notify this officer of any suspicious case of sickness on board. In case of infectious disease on an incoming vessel the sick are removed and isolated and the ship disinfected. The disinfection consists in destruction of infected clothing and bedding, the pumping out and flushing of the bilges, and sulphur fumigation for six hours.

The following lines carry passengers to the United States direct:

The Cunard Line, one ship weekly to New York and one weekly to Boston; the White Star Line, one ship weekly to New York; the Guion Line, one ship every fortnight to New York; the American Line, one ship weekly to Philadelphia. When the emigrant season is at its height the Cunard Line puts on an extra weekly ship for New York. These ships are all in excellent condition. They are cleanly, well ventilated, and well provisioned. In addition to these lines there are three lines carrying passengers to Montreal and Quebec, the Allan, Dominion, and Beaver lines. Most of their steerage passengers find their way to the United States. The principal freight lines are the White Star, Warren, Leyland, Johnston, Allan, and Harrison lines. Most of these ships are engaged in the cattle trade. They are large, well-appointed steel vessels. In addition to these there is a considerable number of "tramp" steamers and sailing vessels engaged in the American trade.

Twelve ships on an average sail from this port weekly for the United States. During the autumn this average will probably be higher, owing to an increase in the number of freight ships.

Thus far but little difficulty has been experienced in enforcing the regulations, the managers of the several lines expressing a desire to comply with all the requirements of the law.

The steerage passengers embarking at Liverpool for the United States are, for the most part, emigrants from the British Isles, Norway and Sweden. Very few, comparatively, come from other places on the Continent. Of late, however, a considerable number of Russians and Poles have embarked at Liverpool, owing, no doubt, to the fact that many continental lines refuse to carry them. A few Germans and Austrians ship at Liverpool. Italians are occasionally met with; Frenchmen almost never. Foreign emigrants are housed until they embark in a large number of boarding houses scattered throughout the city. These are, for the most part, well kept.

The White Star and Cunard lines have excluded Russians and carry very few continental emigrants except Scandinavians. The Guion and American lines carry Russians and Poles to a limited extent.

With few exceptions the only classes of emigrants passing through this port requiring detention or disinfection of baggage are Swedes from Gothenburg, the latter place being infected with smallpox, and Russians. A large number of emigrants for Liverpool pass through Gothenburg and, as disinfection facilities here are limited, much trouble was experienced in dealing with their baggage. Finally, by arrangement with the steamship companies and the cooperation of Consul Shepherd at Gothenburg, the checked baggage of these emigrants is placed, as soon as they arrive, on a lighter moored alongside the steamer at Gothenburg, or is placed in an apartment and sealed up, a consular certificate setting forth these facts being obtained. This baggage is passed at Liverpool and the hand baggage only subjected to disinfection. These emigrants are all vaccinated by the ship's surgeon prior to their inspection.

The effects of emigrants from Russia and other suspected places on the Continent are invariably disinfected. The facilities for disinfection consist of two small steam-jacket chambers connected with the local fever hospitals. These appliances are barely adequate to meet present exigencies, and the steamship companies have been warned of the necessity for erecting an adequate disinfecting plant for their exclusive use. A large plant is being erected for the use of the city sanitary authorities, but I have been informed that this apparatus will not be available for the steamship companies. Thirty thousand three hundred and fifty-one emigrants in all have embarked at this port for the United States from April 22 to July 31. The merchandise shipped from Liverpool to the United States is of a character so varied that a description of it would embrace almost every article known to commerce. The chief articles of interest from a sanitary point of view are rags, wools, hair, and hides. All rags are disinfected by the sulphur process prior to shipment and wool, hair, etc., coming from suspected regions are similarly treated unless accompanied by a consular certificate stating that they have been disinfected or have been collected in a noninfected locality. No sanitary certificate from a local official is excepted unless explicitly guaranteed by a consular or medical officer of the United States. These products come chiefly from Russia, Turkey, Syria, Persia, Egypt, India, Australia, and the west coast of Africa. A very large quantity of wool is exported to the United States, and the question of its disinfection has been a difficult one. In many cases it is impossible to obtain a consular certificate, and the cost of unbaling and disinfection is so great that dealers either abstain from shipping it in such cases or attempt to pass it through other ports. They complain, whether justly or not I do not know, that the requirements at different ports are not the same.

A condensed statement of the transactions of the service for each month is inclosed.

*Remarks and suggestions.*—As the medical officers stationed at European ports have to perform a duty of a delicate and inquisitorial nature on foreign soil, every measure at the command of the Department should be utilized for strengthening their hands and increasing their authority. I would also recommend that, at ports where medical officers are stationed, the relative duties of medical and consular officers be more explicitly defined. The present methods of conducting inspections, though still imperfect in some respects, have required time and labor to bring them to their present state of efficiency, and if the inspections are discontinued during the winter the same ground will have to be gone over in the spring. I therefore suggest that the principal stations be made permanent.

Owing to differences of opinion, certain restrictions are said to be imposed at some ports and not at others, and there is lack of uniformity regarding the localities to be regarded as infected or suspected. I believe that this might be obviated by detailing an officer to reside at some central point in Europe, to have general supervision of foreign stations, to collect information, to decide as to the places which shall be regarded as infected or suspected, and to be available for emergency duty.

In so far as the matter can be reached by regulation or otherwise every effort should be made to induce steamship companies to erect emigrant barracks and plants for disinfection in order that the regulations may be carried out with thoroughness. As an additional safeguard no immigrant should be permitted to land unless provided with an inspection card, and all baggage not labeled and stamped should be held for disinfection at the port of entry.

I do not believe that the present regulations relating to merchandise can be efficiently carried out without competent medical supervision at all important shipping points and unless exporters are compelled by law to produce at the consulate at the port of final shipment all invoices or bills of lading of transshipped goods. Such papers are not now produced, and by collusion between shippers and steam-



ship companies the regulations may be successfully evaded. This might also be effectually prevented if collectors of customs were empowered to refuse entry to all goods regarded by regulations as liable to convey disease unless such goods are certified by a consular or medical officer to be free from infection. As the preponderance of scientific opinion seems opposed to the belief that ordinary merchandise can convey the cholera germ long distances, and experience in past epidemics affords no evidence that it has ever done so, I believe that the list of suspected articles might be curtailed with advantage to commerce and without detriment to the public health. I would suggest, therefore, that so far as cholera-infected regions are concerned the articles of merchandise to be disinfected or debarred shipment be confined to rags, food stuffs, and baggage sent as freight. The time and attention of the inspecting officer could then be devoted with greater advantage to the more threatening source of danger—the emigrant and his personal effects.

In concluding my report I desire to refer to the thorough and efficient work done by Sanitary Inspector C. W. Bailey and to express my appreciation of the many courtesies shown me by the consul, Hon. James E. Neal, and his deputies.

Very respectfully,

L. L. WILLIAMS,

*Passed Assistant Surgeon, M. H. S.*

*Abstract of bills of health issued at Liverpool during the months of April, May, June, and July, 1893.*

| Month.      | No. of vessels inspected. | Destination. | No. of crew.            |           | No. in-spected. | No. detained under observation. |                    | No. pieces baggage inspected. | No. pieces baggage disinfected. | Nature of cargo—general or specific. | Cargo disinfected in whole or in part. Specify.   | Sanitary condition of port. | Any facts of importance regarding the vessel (whether disinfected, passengers, crew, baggage, and the cargo. |
|-------------|---------------------------|--------------|-------------------------|-----------|-----------------|---------------------------------|--------------------|-------------------------------|---------------------------------|--------------------------------------|---|-----------------------------|--|
|             |                           |              | First and second cabin. | Steerage. |                 | No. detained under observation. | No. days detained. |                               |                                 |                                      |   |                             |  |
| April 22-30 | 12                        |              | 1,850                   | 1,614     | 3,856           | 7                               | 7                  |                               |                                 | General.                             | { <div style="display: inline-block; vertical-align: middle;">             (*<br/>(*<br/>(*<br/>(*           </div> } | Satisfactory.               |  |
| May         | 46                        |              | 5,600                   | 4,559     | 12,449          | 38                              | 7                  | 2,186                         | 43                              |                                      |   |                             |  |
| June        | 49                        |              | 5,412                   | 3,779     | 8,256           |                                 |                    | 11,623                        | 701                             |                                      |   |                             |  |
| July        | 53                        |              | 5,096                   | 3,494     | 5,790           | 7                               | 7                  | 6,800                         | 802                             |                                      |   |                             |  |

\* Part of cargo disinfected from time to time according to regulations.

REPORT OF PASSED ASSISTANT SURG. W. J. PETTUS, DETAILED FOR DUTY AT SOUTHAMPTON, ENGLAND.

U. S. CONSULATE, U. S. MARINE-HOSPITAL SERVICE,

PORT OF SOUTHAMPTON, ENGLAND, SURGEON'S OFFICE,

*July 10, 1893.*

*To the Surgeon-General, U. S. Marine-Hospital Service, Washington, D. C.:*

SIR: I have the honor to submit the following report of the water supply of Southampton. The source of supply is from two wells, each 100 feet deep, sunk into the chalk strata which underlies all this part of England. From these wells it is pumped into reservoirs (covered) near by, whence it is conveyed to the city in iron mains. The wells are 8 miles distant from Southampton. By this system the minimum danger of pollution is secured.

The Hamburg-American, North German Lloyd, and American Line steamers all take supplies of this water from the city mains. The water as it comes from the wells contains 16° of hardness from chalk held in solution; by passage through Atkins filters and treatment with slaked lime this hardness is reduced to 4°. I inclose herewith analysis of water by Prof. Wanklyn before it is softened.

Very respectfully,

W. J. PETTUS,

*Passed Assistant Surgeon, M. H. S.*

## REPORT OF TRANSACTIONS UNDER THE "NATIONAL QUARANTINE LAW" AT SOUTHAMPTON, ENGLAND.

SOUTHAMPTON, ENGLAND, *July 31, 1893.**To the Surgeon-General, U. S. Marine-Hospital Service, Washington, D. C.:*

SIR: I have the honor to submit the following report of transactions at this station since my arrival here on the 29th of March last. I found that the consul had posted a copy of the national quarantine laws of February 15, 1893, in the consulate ten days previously, so it was announced that the laws would be enforced at this port on and after the 1st day of April, 1893. There are four passenger steamers per week leaving this port for the United States. Two of these belong to the North German Lloyd Line, sailing from Bremen to New York, coming into Southampton water and anchoring at a distance of 5 miles from the town. Passengers and their effects are conveyed aboard by tenders. The Hamburg-American Line has one vessel per week from Hamburg to New York, it anchoring down the harbor and embarking passengers from tenders. Neither of these lines carries emigrants from this port except on rare occasions, only embarking first and second cabin passengers. These are inspected as they pass down the gangway on the tender, being brought here by trains that convey them to the docks, alongside the tender. Abundant opportunities for further inspection of passengers are afforded during the ride to the steamer, requiring half an hour. After looking over the bill of health from port of departure and ascertaining whether there has been any sickness or death on the voyage, the bill of health for this port is given. The American Line has four vessels per month carrying passengers to New York, sailing direct from this port.

At present a vessel leaves here for New York every Saturday at noon. All passengers are brought from London by special trains to the dock where the ship lies. The train bringing the emigrants arrives a few minutes before they are embarked. On the afternoon before the day of sailing the list of emigrants required by immigration laws and regulations of March 11, 1893, is submitted to me for approval. On this list is stated the last place of residence and birthplace of emigrant. This list is of great assistance to the system of inspection here, as the period of inspection is very short. I deem it of the greatest importance to know where the passenger has lived or has been during the few weeks immediately before embarkation, as the visual inspection of emigrants for the purpose of preventing the importation of cholera to our country, even under the most favorable circumstances, must be very unsatisfactory, except in one respect, and that is that after some practice one soon learns to detect nationality at a glance, and, knowing just where cholera or any other infectious or contagious disease is epidemic, it is possible to prevent the embarkation of people from infected or suspicious countries. The physiognomy of a Russian or Russian Jew is unmistakable after one has studied the faces of a few. Russians frequently claim to be Germans, and nearly all of them say they have lived in England for at least two months. When their circumstances and the treatment they are subjected to are considered, it is not surprising that they deny their nationality and claim residence in a town they have merely passed through en route to the port of departure. Visual inspection prevents this class of deceit. All emigrants' baggage is inspected first and labeled; then the emigrants themselves are passed up a narrow gangway one at a time, when they are carefully inspected, all of suspicious nationality being put aside for further investigation. Those passing are given an inspection card and are allowed to embark. This system is the best that could be devised, as there are no barracks here for the housing and care of those proposing to sail to the United States. Plans for such barracks have recently been submitted to me providing accommodation for 300 emigrants, with 350 cubic feet of air space per head, and ventilating shafts

calculated to supply 2,000 cubic feet of fresh air for each occupant per hour. Sufficient bath and water-closet facilities are provided for in the plans. It is contemplated that these barracks will be completed early in 1894. The steamship companies are not building them; it is to be done by outside parties. At present the emigrants are cared for at the Emigrants' Home, Blackwall, London, while awaiting embarkation. This is a well-managed institution on the banks of the Thames, with a capacity of about 500 beds. By agreement with the superintendent the effects of all Continental emigrants, including the clothes they wear, are disinfected by sulphur fumigation; then each person has a bath and puts on the disinfected clothes. All coming from infected localities are detained at least five days and have all their clothes boiled for at least half an hour. All this work done at Blackwall is under the supervision of Dr. S. D. Willard, sanitary inspector Marine-Hospital Service. Those from infected localities who do not have certificates from Dr. Willard undergo the five days' detention under my observation, and their effects are disinfected by steam in the plant belonging to the board of health of Southampton. The steamship companies have no disinfecting plant here. It has been my custom to notify the steamship agents from time to time what localities are considered infected, so as to give them a chance to refuse to book any emigrants from such places. The American Line have been very careful in this respect and have in this way lessened the work to some extent. Instructions are sent to the subagents in different countries that emigrants from certain localities will not be accepted as passengers; hence such people are prevented in many cases from reaching this port. I will here quote one of the above-mentioned letters in full.

"SOUTHAMPTON, April 27, 1893.

"Messrs. RICHARDSON, SPENCE & Co.,

"*Managing Agents American Line, Southampton.*

GENTLEMEN: According to instructions I have to inform you that emigrants from or near the following-named places can not be allowed to embark for the United States from this port without a certificate of disinfection from a U. S. consul or medical officer of the United States, viz, Hamburg; France in or near Lorient, Quimper, Marseilles; Russia, and Galicia. Unless a disinfecting plant and barracks are built here this disinfection will have to be done in London.

"Very respectfully,

"W. J. PETTUS,

"*Passed Assistant Surgeon M. H. S.*"

The class of emigrants sailing from this port is very good, mostly Scandinavians, with some English, Irish, Scotch, and Swiss. Besides the Swiss but few from the Continent come here. I consider the Scandinavians to be a desirable class of emigrants, and but few of them have to be rejected. They still persist in bringing feather beds with them, in spite of warnings that they can not be carried to America. All emigrants embarking here get small straw mattresses, which are sold on the wharf for 37 cents each. These are thrown away or destroyed before they land on the other side. The health of those who have come here to embark has been exceptionally good and no case of contagious or infectious disease has developed among them while awaiting embarkation. Before vessels sail the manifest of cargo is submitted to me, and care is taken that no articles liable to convey infection are carried.

Since the 1st of April of this year 3,897 first cabin, 3,195 second cabin, and 5,819 steerage passengers have been inspected at this port, making a total of 12,911 embarking from this port for the United States.

The sanitary condition of Southampton has been very satisfactory, though there are from time to time a few cases of smallpox reported. The local health officer



is an efficient and zealous man and has been very kind in affording information. He inspects all passengers from infected or suspicious localities, but there is no detention unless actual sickness exists. The addresses of all passengers are taken before they land here. Cases of infectious or contagious diseases are cared for in a special isolation hospital or on board the hospital ship, which is anchored out in the harbor at a safe distance from other vessels. The city has a good hospital for isolation of infectious diseases, with an excellent steam disinfecting plant attached. Vessels from infected localities with cases of yellow fever or cholera aboard are sent to a station near Ryde, a distance of 18 miles from Southampton, where the sick are placed on a special hospital ship provided for that purpose and the vessel disinfected. Dr. Wellesley Harris, M. R. C. S., D. P. H., medical officer of health for this port, is thoroughly competent and vigorously carries out the sanitary regulations of the city.

In letter of July 10 a short description of the water supply of Southampton was given. The daily supply of water is 30 gallons per head. "The source of supply is from two wells, each 100 feet deep, sunk into the chalk strata which underlies all this part of England. From these wells it is pumped into covered reservoirs near by, from whence it is conveyed to the city in iron mains. The wells are 8 miles distant from Southampton. By this system a minimum danger of pollution is secured. The Hamburg-American, North German Lloyd, and American Line steamers all take supplies of this water from the city mains. The water as it comes from the wells contains 16° of hardness from chalk held in solution; by passage through Atkens filters and treatment with slacked lime this hardness is reduced to 4°."

From April 1 to August 1 sixty-five bills of health were issued, or a little more than sixteen per month. I have made a careful investigation of the sewage disposal methods of this city, and in my opinion they are most excellent and thorough. The liquid sewage is collected into reservoirs, where, by treatment with ferrozone, the sludge is precipitated. "Ferrozone is mixed with just enough clean water to make the whole in a stiff paste, which is let into a box through a shoot with perforated sides placed in the sewer. The sewage flowing past washes the ferrozone gradually out of the box, and is thoroughly mixed with it by the time it discharges into the reservoir at a manhole 150 feet distant from the box. A small stream of water falling upon the ferrozone prevents it from consolidating." The sludge settles to the bottom, leaving the water above very clear. This water is forced out into the harbor by an automatic ejector. The emptying of the clarified water from the reservoir puts into action a compressed air ejector, which forces the sludge through an iron pipe to the sewage destructor, a distance of about half a mile, where it is collected and finds a ready sale to agriculturists at 50 cents per load. The collections from ash and garbage barrels are burned in specially constructed furnaces without the use of any other fuel. The street sweepings are mixed with the sludge before it is sold as manure. Everything resulting from the burning of the refuse is utilized. The ashes and clinkers falling from the furnaces are sold. The clinkers are used in making roadways and paving slabs, and the ashes for making mortar. The heat from the destructor produces the power for running all engines used in works, together with electric-light plant and storage of compressed air for operating the ejectors. So economically is this system managed that after paying all expenses each year they have a balance of \$1,000 from sale of sludge, slabs, mortar, etc. There are no appreciable odors to be noticed in the vicinity of the works. The cost of the entire plant was about \$35,000.

My work here is not so satisfactory as it would be were there barracks provided here for the detention of emigrants pending their embarkation, together with a steam disinfecting plant. I would respectfully recommend that all steamship companies carrying emigrants to the United States be required to provide suitable

barracks, with disinfecting plant, at their port of departure. Should any companies refuse to provide these barracks and steam disinfecting plant they should be notified that no emigrants could be landed in the United States from their port after the first appearance of cholera in any European country next summer. Collectors of customs, health officers, and immigration officers should be instructed to absolutely refuse entrance in any United States port to any steerage passenger who has not in every way complied with the strict letter of the law of February 15, 1893, and succeeding circular relating to it. We must have such substantial support as is provided for in the above recommendation to enable us to carry out the letter and spirit of the regulations.

Very respectfully,

W. J. PETTUS,

*Passed Assistant Surgeon M. H. S.*

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REPORT OF PASSED ASSISTANT SURG. R. M. WOODWARD, DETAILED FOR DUTY  
AT ROTTERDAM, HOLLAND.

U. S. TREASURY DEPARTMENT, MARINE-HOSPITAL SERVICE,

*Rotterdam, Netherlands, July 31, 1893.*

*To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:*

SIR: In accordance with official instructions I arrived at the port of Rotterdam, Netherlands, March 30, 1893. The United States quarantine regulations not having been posted the ten days required by law, my official duties did not begin until April 2, 1893.

In the year 1892, when cholera prevailed so widely in Europe, the first case appeared in the Netherlands during the week beginning August 28, and the first duly certified case in the city of Rotterdam September 7. This latter was preceded by five suspected cases reported as "cholera nostras;" the first of the latter cases occurred on the 26th of August. The last case of cholera occurred in Rotterdam on November 19, 1892, and the last case in the Netherlands during the week beginning December 11, 1892.

During the above period thirty-three cases of cholera Asiatica were treated in the city, with a mortality of 66½ per cent. Twelve cases of "cholera nostras" were treated, with a mortality of 50 per cent. The disease was almost exclusively confined to dock laborers and people living on small truck boats, who, in the face of warnings from the board of health, persisted in dipping water from the river at the docks, many times near the mouth of a sewer, and drinking the same.

At the time of this outbreak Mr. Walter E. Gardner, U. S. consul at the port of Rotterdam, established a system of inspection of emigrants and disinfection of ships. Two local physicians were employed to make the medical examinations, and a licensed chemist disinfected all vessels leaving this port for the United States. This was still in vogue at the time of my arrival. Mr. Gardner deserves great credit for the interest he took in the matter, and undoubtedly good resulted from his efforts. The two physicians continued to assist me, emigration being then very heavy. Disinfection of freight vessels was discontinued by instructions from the Department, but disinfection of passenger steamers was pursued until June, 1893, at which time it was also stopped.

Surg. W. A. Wheeler visited my station in the month of June and passed a week inspecting the methods here. At that time the contract between the U. S. consul and the two local physicians terminated, and I have since conducted the examinations unassisted. Just after the above-mentioned time I established a system of daily inspection instead of examining the emigrants on the day of embarkation, and it is only from this date that I can give complete statistics of the number rejected and detained.

The important duty for which we were detailed was to examine emigrants and to see that healthy people and noninfected baggage only went to America. This

I set about at once, and soon perfected a satisfactory plan. No one not actually on the ground can appreciate the difficulties we have encountered in enforcing these regulations. The tide and the peculiar methods of loading and discharging cargo, together with the laws and regulations of this Government, present many obstacles.

There is but one regular passenger line out of Rotterdam, the Netherlands-American Steam Navigation Company, making semiweekly sailings to New York, with an occasional stop at Baltimore. The larger ships stop at Boulogne sur Mer for passengers. Two ships, the *Schiedam* and *Zaandam*, sail from Amsterdam, carrying only steerage passengers.

The following is a list of the Netherlands-American ships:

| Name of vessel.  | Gross tonnage. | Net tonnage. | Number in crew. | Passenger capacity. |               |           |
|------------------|----------------|--------------|-----------------|---------------------|---------------|-----------|
|                  |                |              |                 | First class.        | Second class. | Steerage. |
| Spaarndam .....  | 4,539          | 3,244        | 104             | 95                  | 92            | 909       |
| Maasdam .....    | 3,984          | 2,786        | 108             | 130                 | 54            | 805       |
| Werkendam .....  | 3,639          | 2,668        | 77              | 90                  | 80            | 772       |
| Zaandam .....    | 3,062          | 2,282        | 38              | -----               | -----         | 1,068     |
| Schiedam .....   | 2,745          | 2,085        | 49              | -----               | -----         | 696       |
| Glidam .....     | 2,751          | 1,773        | 52              | 62                  | 8             | 456       |
| Glubbeldam ..... | 2,751          | 1,773        | 58              | 62                  | 8             | 456       |
| Veendam .....    | 4,036          | 2,780        | 104             | 130                 | 54            | 819       |
| Amsterdam .....  | 3,629          | 2,601        | 85              | 88                  | 72            | 808       |
| Rotterdam .....  | 3,329          | 2,361        | 84              | 62                  | 70            | 648       |
| Obdam .....      | 3,657          | 2,657        | 81              | 90                  | 80            | 804       |
| Edam .....       | 3,130          | 2,267        | 50              | -----               | 64            | 871       |
| P. Caland .....  | 2,584          | 1,867        | 50              | -----               | 61            | 674       |

The Netherlands-American Company was organized in 1872. The first emigrants were carried to the United States the following year, numbering 3,024. Each year has witnessed an increase in this traffic until, in the year 1892, it amounted to 35,853. I give below a list of the numbers and nationalities of the emigrants embarked at Rotterdam and Amsterdam during the months of April, May, June, and July, 1893, all of whom I examined; also a list of those embarked at Boulogne sur Mer, none of whom I saw:

*Emigrants embarked at Rotterdam and Amsterdam.*

| Months.     | Austro-Hungary, including Galicia. | Russia, including Poland. | Netherlands. | Belgium. | Italy. | France. | Germany. | British Isles. | Other countries. | Total. |
|-------------|------------------------------------|---------------------------|--------------|----------|--------|---------|----------|----------------|------------------|--------|
| April ..... | 2,189                              | 719                       | 990          | 7        | 383    | 102     | 544      | 59             | 289              | 5,282  |
| May .....   | 1,095                              | 1,299                     | 1,347        | 22       | 717    | 81      | 672      | 74             | 278              | 5,585  |
| June .....  | 1,504                              | 1,985                     | 341          | 8        | 109    | 28      | 406      | 18             | 250              | 4,649  |
| July .....  | 1,166                              | 374                       | 466          | 4        | -----  | -----   | 129      | -----          | 457              | 2,596  |

*Emigrants embarked at Boulogne sur Mer, France.*

| Months.     | Austro-Hungary, including Galicia. | Russia, including Poland. | Netherlands. | Belgium. | Italy. | France. | Germany. | British Isles. | Armenia and Eastern countries. | All other countries. | Total. |
|-------------|------------------------------------|---------------------------|--------------|----------|--------|---------|----------|----------------|--------------------------------|----------------------|--------|
| April ..... | 188                                | 45                        | -----        | 3        | 466    | 93      | 8        | 7              | 80                             | 156                  | 1,044  |
| May .....   | 123                                | 20                        | -----        | -----    | 226    | 19      | 9        | -----          | 236                            | 188                  | 821    |
| June .....  | 26*                                | 68                        | -----        | 15       | 89     | 16      | 6        | 4              | 28                             | 177                  | 429    |
| July .....  | 5                                  | 73                        | -----        | 2        | 23     | 4       | 6        | 1              | -----                          | 24                   | 138    |

Emigrants coming to Rotterdam are met at all trains by interpreters dressed in the company's uniform, and are conducted to the company's hotel. Very few emigrants for this line stop in private boarding houses. This emigrant hotel has



been pronounced the finest in Europe. It is built of brick, four stories and a basement, and was opened February 8, 1893. It is not cheaply constructed, but finished in hard wood, tiling, mosaic floors, etc., and is altogether an elegant building. The kitchens and storerooms are in the basement. The floor above is occupied by the dining room, lunch room, and offices. The three floors above this are divided into several large rooms, each being partitioned into compartments for berths, three in a tier, the total capacity being 879 berths. Ventilators are placed in the wall near the ceiling. Fire escapes are provided and fire extinguishers found throughout the building. The water-closets are at the half-floor landings of the stairways. All water for drinking purposes goes through Pasteur filters. Emigrants are given good board and lodging here at a very moderate rate.

Emigrants upon arrival are not placed in the hotel at once, but in an observation building across the street from it, and are not allowed to mingle with those in the hotel. This observation shed is fitted with water-closets and wash rooms and contains berths for 216. At 9 o'clock each morning I personally examine all who have arrived the day before. Each one is given the following card:

|  |                               |                      |  |
|--|-------------------------------|----------------------|--|
| Date of arrival.....                             |                               | Date of sailing..... |  |
| You are requested to treat<br>bearer as follows: | Antiseptic bath.....          |                      |  |
|  | Hair cut.....                 |                      |  |
|  | Shampoo and combing.....      |                      |  |
|  | Disinfection of clothing..... |                      |  |
|  | Rejected.....                 |                      |  |
|  | O K.....                      |                      |  |

Before my arrival every man, woman, and child is given an antiseptic bath (hot water, soft soap, and creolin). All the men and boys have their hair cut close with clippers and the head shampooed with a mixture of soft soap, carbolic acid, creolin, and petroleum, the shampooing being done with a stiff hairbrush. All the women and girls get the same shampoo without the hair cut, and comb their hair with a fine-tooth comb, one of which is attached to each bath apartment by means of a small brass chain. As soon as the new disinfection chamber is built, which is under consideration, each one's clothes will be disinfected while the wearer is in the bath. At present only the few which I so order are disinfected in an efficient but inconvenient apparatus.

The foregoing preliminaries complete, the emigrants come to me one at a time. Everyone opens the clothing over the upper portion of the chest; all the females come with the hair hanging loose down their backs, so that no case of favus can be concealed. I look at the chest, tongue, and throat, eyes, scalp, and hands, besides a general inspection. If an emigrant is found to be clean and in good health he is given the foregoing card, punched in the space opposite "O K." Upon this card my clerk then stamps the date of arrival and the date of sailing, the latter being for the first ship out if the applicant is from a noninfected locality, and for the next succeeding ship if from a cholera-infected country. He then places my official stamp across the face of the card to prevent any substitution. Each emigrant bearing my card punched "O K" and properly stamped is transferred at once to the emigrant hotel across the street, where he is sold his passage ticket and given the regular "inspection card," filled out entire except my stamp, he still retaining the "O K" card.

If at my examination the applicant is found to have omitted the bath, hair cut, or shampoo, or these have been unsatisfactorily accomplished, he is given my card, punched opposite the required measures, and is immediately sent to the bath house, which is within the same inclosure as the observation building. Should he get through with what is ordered for him I examine him again the same day; if not he stays in the observation shed until the following day, when, if all right,

his old card is destroyed and an "O K" card substituted. Women are often sent back time after time on account of the vermin in the hair, and if I find that they will not comb them out their hair is cut also.

If an applicant is afflicted with anything calling for rejection his card is punched "Rejected" and he is put aside. Those I reject are seen by a physician employed by the company; if, in his opinion, they will recover rapidly under treatment he orders the treatment; if not the company at once sends the emigrants back to their homes (at the expense, I am told, of the agents who forwarded them). Those who are taken under treatment by the company's physician pass me again when he pronounces them recovered. If I consider them well they go; if not they are returned to him, and they can not embark until they have my "O K" card, properly filled out.

By the above detailed method the emigrants do not lose their passage money and are in no danger of losing their baggage by having it stored away in the hold.

As each one enters the room where my examination is made his papers are examined. If from an infected country he is placed in a certain inclosure. All these people are examined together when the others have passed, so as to avoid confusion in stamping the "date of sailing." This last date shows the ticket agent in the hotel what ship to sell tickets for and facilitates his work.

At the final inspection at embarkation each one presents me this "O K" card, bearing my stamp and the proper date of sailing. This is then destroyed and his inspection card stamped, whereupon he goes aboard the ship. If his card does not bear the proper date or is otherwise incorrect it is detected at a glance and the person stopped.

As before stated, the month of July is the only one for which I have complete statistics of the number detained under observation and the number rejected. In July I examined 3,014 applicants for steerage passage. Of these, I detained 461, or about 15 per cent, for a period of five days. Out of the total number I rejected 183, or about 6 per cent. Rejecting one member of a family is usually equivalent to rejecting the entire family; including the families of the rejected, therefore, 418, or about 13 per cent, were turned back. The 183 rejected included 154 favus, 12 scabies, 7 purulent conjunctivitis, 3 fever, 2 idiocy, 1 measles, 1 chicken pox, and 3 doubtful.

I have asked the company to post a notice in the hotel, printed in several languages, to the effect that no food will be allowed to pass with the emigrants on board the vessels. The notice will be prepared at once, and I will then throw out all material of this kind found in the baggage or carried about the persons of the emigrants. Nearly every valise or bag contains a lot of this food, which is not only dirty but a source of danger. The emigrant hotel is surrounded daily by a number of peddlers, who buttonhole the ignorant emigrants and tell them they will be starved on the ship and that their only salvation lies in taking a good supply of eatables with them. The peddlers then dispose of their stock at exorbitant prices and the poor people squander the little money they have, which would come into good play when they reach the other side.

All of the company's dock employ  s drink tea instead of water, tanks of this beverage being kept constantly on tap; and a notice is posted stating that any employ   found drinking river water will be discharged. This was instituted during the cholera season last year. I suggested that similar tanks of tea be placed in the hotel for the gratuitous use of emigrants, and the suggestion has been adopted.

The disinfection chamber for baggage is built in one end of the dock shed and is about 25 feet long by 13 feet broad and 8 feet high. Across the ceiling gas pipes are arranged about 8 inches apart, and on these are attached a series of

hooks for clothing. The steam enters by a 2½-inch pipe at one end near the floor. A large double door opens into the chamber, in one side of which is a small window, through which the thermometer is read. The chamber has a capacity for about 200 ordinary packages of emigrant clothes.

All baggage from those countries that I consider infected is unpacked, each article well shaken out, and the entire bundle suspended on a hook. The steam is then turned on, the doors being closed and barred. My clerk watches the thermometer, and when 103° C. is reached he times it for thirty minutes. This temperature is reached in from twenty to thirty minutes, and the thermometer frequently registers 110° C. before the time is up. The doors are then opened and the baggage repacked, my clerk counting the packages and issuing labels for the same. I believe that disinfection by this method of suspension is better than can possibly be accomplished by spreading the clothes on horizontal racks, for, however well the outside pieces may be disinfected, the steam can not permeate to the center of a bundle as it does when it is loosely suspended by one end. All leather goods and other articles which can not be steamed are dipped in a 2 per cent solution of carbolic acid.

All emigrant baggage from noninfected localities is inspected. The baggage master secures the keys of all trunks and valises and has them arranged in rows, open for inspection, at 5 p. m. on the day before the sailing of each ship. All dirty baggage is ordered into the disinfecting chamber. All feather beds are stopped and notices have been sent out telling the people not to bring them. When I began this about forty-five beds were stopped from the first ship. Now only about half a dozen are found each time.

The inspection of the ship and crew takes place at 4.30 p. m. on the day before sailing. On this day a board of Netherlands commissioners visits all passenger steamers and inspects the steerage, food, lifeboats, etc. At embarkation the Netherlands Emigration Commission places a man at the docks to count the number sailing.

Following are the various lines of freight vessels sailing from this port :

*Neptune Steam Navigation Company, of Sunderland, England.*

| Name of vessel. | Tonnage. |       | Number of crew. |
|-----------------|----------|-------|-----------------|
|                 | Gross.   | Net.  |                 |
| Calitro .....   | 2,969    | 1,920 | 26              |
| Chicago .....   | 2,381    | 1,538 | 26              |
| Delano .....    | 2,968    | 1,920 | 27              |
| Ohio .....      | 2,389    | 1,568 | 26              |
| Patapsco .....  | 2,933    | 1,894 | 26              |
| Urbino .....    | 2,412    | 1,572 | 26              |
| Venango .....   | 2,938    | 1,910 | 26              |

Local agents, Hudig & Blokhuyzen.  
Destination, Baltimore.  
Frequency of sailing, once a week.

*North American Transport Line.*

| Name of vessel.   | Tonnage. |       | Number of crew. |
|-------------------|----------|-------|-----------------|
|                   | Gross.   | Net.  |                 |
| Loch Lomond ..... | 2,571    | 1,689 | 28              |
| Loch Maree .....  | 2,698    | 1,728 | 31              |
| Loch Etire .....  | 2,011    | 1,397 | 30              |
| Carlisle .....    | 2,141    | 1,397 | 25              |
| Winchester .....  | 2,198    | 1,431 | 30              |

Local agents, Ruys & Co.  
Destination, New York.  
Frequency of sailing, fortnightly.



*North Atlantic Trident Line.*

| Name of vessel. | Tonnage. |       | Number of crew. |
|-----------------|----------|-------|-----------------|
|                 | Gross.   | Net.  |                 |
| Bidor .....     | 2,876    | 1,891 | 34              |
| Enskar .....    | 3,093    | 1,998 | 36              |
| Tonar .....     | 3,014    | 1,976 | 32              |

Local agents, Ruys & Co.  
 Destination, Philadelphia.  
 Frequency of sailing, monthly.

*German-American Petroleum Company of Bremen.*

| Name of vessel.              | Tonnage. |       | Number of crew. |
|------------------------------|----------|-------|-----------------|
|                              | Gross.   | Net.  |                 |
| Minister Maybach .....       | 2,881    | 2,132 | 33              |
| Willkommen .....             | 2,834    | 2,335 | 34              |
| Gut Heil .....               | 2,555    | 1,997 | 35              |
| Energie .....                | 2,910    | 1,908 | 35              |
| Standard .....               | 2,765    | 2,008 | 35              |
| Geestemünde .....            | 2,750    | 2,032 | 35              |
| Brilliant .....              | 3,402    | 2,336 | 35              |
| Heligoland .....             | 2,558    | 1,735 | 34              |
| Bürgermeister Petersen ..... | 2,040    | 2,048 | 35              |
| Diamant .....                | 3,583    | 2,440 | 38              |
| Mannheim .....               | 3,583    | 2,441 | 38              |
| Hafis .....                  | 2,116    | 1,587 | 33              |
| Paula .....                  | 2,835    | 2,302 | 33              |
| Elise Marie .....            | 3,194    | 2,586 | 33              |

Local agents, Wambersie & Son.  
 Destination, New York, Philadelphia, and Baltimore.  
 Frequency of sailing, weekly.  
 These vessels also sail to Hamburg, Geestemünde, Stettin, and Danzig, each ship receiving sailing orders after loading.

*American Petroleum Company.*

| Name of vessel.   | Tonnage. |       | Number of crew. |
|-------------------|----------|-------|-----------------|
|                   | Gross.   | Net.  |                 |
| American .....    | 3,897    | 2,927 | 37              |
| Bremerhaven ..... | 3,255    | 2,578 | 36              |
| Charlois .....    | 2,744    | 2,115 | 33              |
| Ocean .....       | 2,325    | 1,872 | 34              |
| Chester .....     | 2,530    | 1,867 | 33              |

Local agents, Wambersie & Son.  
 Destination, New York, Philadelphia, and Baltimore.  
 Frequency of sailing, fortnightly.

The above lines frequently charter an extra vessel for one trip or a series of trips. In addition to the regular lines, the firms of Hudig & Peters, William H. Muller & Co., Schencker & Co., Kuiper von Glam & Smer, Verbeet & van Swyndregt, and van der Slik & Co., send out an occasional ship to the United States.

One firm only, Cohen & Co., is now shipping rags from Rotterdam to the United States, and but few rags have been shipped since my arrival. This firm has recently built two new disinfecting chambers of brick, each one 40 feet long by 16 feet wide and 12 feet high, with accommodations for 30 bales of rags. Swinging iron arms are fastened to the side walls. When these are brought to the center, galvanized wire screening is spread over them, and upon this the rags are scattered from 4 to 6 inches deep. A large sulphur stove is placed inside, in which are burned 3 pounds to every 1,000 cubic feet of space, and the fumigation is continued for six hours. This is superintended by the consul's clerk, under

my direction. Hides, wool, hair, and other articles requiring disinfection are either treated in this rag house or in the disinfecting chamber of the passenger steamship company; occasionally in a closed iron lighter or box car.

#### DIFFICULTIES IN THE WAY OF CARRYING OUT THE REGULATIONS.

1. *Mustering the crew.*—All ships coming to Rotterdam are, with few exceptions, unloaded and reloaded by stevedores, the crew having nothing whatever to do with this work. Consequently, as soon as the vessel reaches the docks and her lines are made fast the entire crew leave, and that is the last seen of them until the hour of sailing again. One line discharges the crew each trip and employs new men. There is no law in the Netherlands to compel a sailor to come aboard ship one minute before she sails; therefore it is very difficult to get them together for inspection.

2. *Inspecting the freight manifest.*—The freight manifest is usually the last thing completed before the sailing of the ship. In the wharves will be stored, we will say, 500 barrels, 400 boxes, and 200 bales of goods. They load so as to fit these goods in very tight and prevent damage from the rolling of the ship. On a ship sailing to-day they may load of the above 450 barrels, 225 boxes, and 100 bales. No one can tell just how many of each will be placed aboard until the loading is complete, the remainder going by the next ship. Then a great deal of loading is done from lighters towed down from the Rhine. One of these may arrive within an hour or two of sailing, draw up alongside, and hoist her cargo aboard, whereas if she had arrived an hour later the next ship of the line would have received her freight. It is maintained by the agents that a great many bills of lading, from which the freight manifest is compiled, arrive in the last mails, and I know from personal observation that where a ship sails after midnight it is customary for the clerks in the freight agent's office to be busy on the manifest away into the night. To tell by personal observation just what is stored away in the hold of a ship is an absolute impossibility which needs no demonstration.

3. *Action of local customs officers.*—Customs officers of the Netherlands Government are constantly aboard a vessel while loading, and if she takes on any wine or spirits, of which large quantities are shipped from here, they close and seal with twine and wax each hatch as soon as it is loaded. These seals can not be broken until the vessel is 30 miles from port. The storeroom where the meats are placed generally contains some bottles of wine for the use of the ship's officers, and this room is consequently sealed by the customs officers, preventing the inspection of the meat. The proper customs officials who have authority to break these seals on request are seldom aboard at the time of inspection, but have left on watch a man without any right to molest them. The captain is as powerless as anyone. Actually, on one vessel I inspected, they had, by mistake, locked up in the storeroom some cooking utensils that were badly needed, and there was no way to get at them. This will illustrate what I have already mentioned as to the impracticability of ascertaining by personal observation whether the ship carries any cargo dangerous to public health.

4. *The water-closets.*—On freight vessels it is customary for the stevedores to use the water-closets on deck forward. They are not provided with a flush as are those in the cabin, and in the course of a day become very filthy. The outlet from them opens directly through the side of the vessel. A lighter always lays alongside, and usually there is one on either side; and to flush the closets out washes the mass into the lighter. To avoid the necessity of this, I have diligently pushed the suggestion of having the closets cleaned and locked when the ship comes into port, compelling the stevedores to go ashore, where accommodations are provided for them on the docks. Where a vessel lays in mid stream this is impracticable.

and I have then insisted on locking all but one closet, and trying to choose one located where it may be washed out at least once a day.

5. *Ashes and slops.*—All steam vessels necessarily use their boilers while discharging cargo and reloading, and ashes accumulate in large quantities. The law prohibits throwing anything of this kind into the river, and it has been customary to pile them on the forward deck until the ship reaches the English Channel, when they are thrown overboard and the decks washed. Ashes are hygienically clean, but one kind of dirt is conducive to another, and the cook gets in the habit of throwing his slops on the same pile, so that it is anything but inviting. After great effort I have succeeded in getting the agents to order a garbage boat alongside to remove this mass on the day set for my inspection.

6. *Boarding the vessels.*—The freight ships, as a rule, expect the medical officer to come aboard by any kind of an approach that is the handiest. Usually a single plank, about 15 inches wide, is placed from the side of a ship to the dock, or to a trestle. It is generally inclined at a great angle, and has become very slippery from dragging freight over it. There are no cross strips nailed to it and no guard to hold by. It moves up and down at each step. Sometimes one extremity of the plank is suspended at the end of a rope let down over the side of a vessel, causing it to tip with each step, momentarily threatening to throw the officer into the river. If he is fortunate enough to reach the side of the vessel over this last-mentioned affair he must grasp a swinging rope ladder and climb aboard. Sometimes the planks are wet from rain and covered with pieces of coal, while the coal carriers are elbowing the officer in passing and repassing with their burdens. Vessels lying in the stream expect him to climb over a lighter or two, then ascend by a small ladder placed against the side of the ship, or by a rope ladder suspended from above.

I have had more trouble in this than in any other one item, and have had such narrow escapes, at one time falling from a lighter into a boat, that I now absolutely refuse to go aboard unless a guarded plank or a companion way is furnished, and the ships are complying with my demand.

When vessels do not conform to the regulations the only alternative that the medical officer has is withholding the bill of health. Let me detail what this means at a port like Rotterdam. All large vessels go out at high tide. The second tide is not as high as the first, and if large vessels are detained from going on the higher tide they must wait twenty-four hours at great expense. Some of the ships draw 23 or more feet of water. When a strong wind is blowing offshore it makes an appreciable difference in the depth of the water in the artificial channels through which vessels approach or leave the city. It is not an infrequent occurrence for a vessel to be detained three days by reason of this wind, so that withholding the bill of health one day may mean an actual detention of several days.

Many freight vessels take a cargo under contract to deliver it at the port of destination within a specified number of days from the time of loading, or forfeit a large per cent of the profits of the trip; and twenty-four hours' delay means a great deal to such a ship. If the burden of this detention fell upon those causing the difficulty it would be morally just and proper to enforce it, but such is not the case. The fault usually lies with the agents, or arises from the peculiar nature of the laws in force, while the financial loss, etc., has to be borne by the masters and the owners.

#### RECOMMENDATIONS.

1. *Permanency of inspection system.*—There can be no doubt of the good resulting from the present system of inspection, and I therefore earnestly recommend that it be made permanent.

It is not alone cholera we are trying to keep out, but smallpox, favus, and many other diseases equally repulsive.



All, or nearly all, European steamship companies are making some effort to conform to the United States regulations, thus insuring a better class of emigrants.

2. *All emigrant companies to provide barracks, etc.*—All steamship companies carrying emigrants should be compelled to build suitable barracks where emigrants can be collected together for observation, bathing, and thorough examination. No medical examination can be complete where the emigrants are first seen as they file aboard ship, dirty and uncombed. Those companies refusing to furnish such facilities should be denied entry at United States ports.

3. *Cooperation of officers in America.*—It is very necessary that, in order to make our work effectual, there should be perfect cooperation on the home side. It does little good for us to refuse a clean bill of health to a ship, or a proper certificate for certain cargo, and then have the ship or cargo received in America without a question. No emigrant should be allowed to enter who is unprovided with our "inspection card," properly filled out, and his baggage properly labelled.

R. M. WOODWARD,

*Passed Assistant Surgeon, M. H. S.*

REPORT OF PASSED ASSISTANT SURGEON G. B. YOUNG, DETAILED FOR DUTY  
AT NAPLES, ITALY.

U. S. CONSULATE, NAPLES, ITALY,

*September 15, 1893.*

*To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:*

SIR: In compliance with the letter of the Department, dated July 6, 1893, directing me to submit a report of the operations of the service at this port for the period between the date of my arrival, April 6, 1893, and July 31, 1893, I have the honor to transmit the following:

Emigration from this port having been suspended on August 8, and, an account of the operations to that date being essential to a complete record, I have ventured to extend the scope of the report to include said date.

In order that a clear understanding of the conditions governing emigration from this port may be had it is necessary to devote some space to a consideration of Italian emigration in general.

A glance at the map shows Italy naturally divided into three distinct divisions. The Island of Sicily on the extreme south, the main body of the peninsula or "boot," and the section containing the northern provinces, which stretch along the base of the Alps, and, while distinct geographically from the main peninsula, are still shut off from the rest of Europe by lofty mountain ranges.

These geographical divisions determine the routes taken by Italian emigrants, and give to emigration from Italian ports the peculiarity of being practically purely Italian, since the natural barriers of sea and mountain direct all passengers of other nationalities to the ports of northern Europe.

In conformity with these natural divisions, the Italian Government has designated three ports at which emigrants may embark, viz, Genoa, Naples, and Palermo.

It is true that there is a small movement of emigrants via Havre, but this cuts a very small figure in the total, and is confined to those coming from the extreme northern districts.

The territory tributary to Genoa embraces the northern provinces and possibly the upper fourth of the peninsula.

The movement therefrom to the United States amounted in 1892 to 6,225 "adult places," or about 6,850 "souls." I specify the United States because it is to be

borne in mind that the Italian emigration to South America outnumbers that to the United States about 3 to 1.

Inasmuch as the total number of Italian emigrants landing in the United States during the calendar year of 1892 was about 75,500 (the exact figures not being at hand), it will be seen at once that the vast majority of the passengers embark at the southern ports. About 2,500, in round numbers, go from Palermo direct; all the balance from Naples.

The great bulk of these passengers are from the provinces in the extreme south and from Sicily, but include some thousand from the middle provinces.

In consequence of its geographical position, practically all the emigrants going via Naples can reach their port of embarkation after, at the furthest, twelve hours by rail from the time of leaving their homes, and in most cases a much briefer journey.

This fact cuts an important figure in the conditions hitherto existing at this port, and in the methods employed in handling the passengers, and will be referred to later.

The movement of passengers from Naples follows a regular curve. Beginning about November, it ascends gradually until about the last of January, when it rapidly rises to its highest point about March 15 to April 15; then declines first slowly and then rapidly until September and October, when it is at its lowest.

During the fiscal year ending June 30, 1893, there were embarked at Naples for New York about 53,000 souls. I say "about," because up to the time of my coming the companies kept no record of "souls," only estimating by "places;" two children, between 1 and 8, being taken as one "place" and children under 1 not being counted at all. Of these 53,000 about 32,000 went during March, April, and May. As sailings were entirely suspended for twelve days in April, this gives the astonishing average of 400 a day for nearly three months.

At the time of my arrival (April 6) there was a lull in the rush. This was due to the fact that the companies were afraid to advertise sailings lest by so doing they might get into trouble with the new law, and thought it best to wait until my arrival, the probable date of which they seemed to know in advance.

I found the method of handling passengers to be as follows:

The business is divided amongst five companies, viz: Anchor Line, English; Navigazione Generale Italiana, commonly known as the Florio Rubbatino; Compagnie Fabre, French; Compagnie Nationale de Navigation, French; and the Nord Deutscher Lloyd.

The four first-named companies compose what is known as the "pool," having a contract with each other as to prices, commissions, and division of profits (but being none the less ready on that account to appropriate each other's passengers).

None of these lines have regular sailing days, and the number of vessels employed varies with the time of the year and the business offering. In last September and October the pool only dispatched two vessels, while in March this year they had twelve, and the Lloyds two more, or one every other day. Altogether there are about ninety sailings a year.

The two French lines, having their headquarters at Marseilles, usually embark considerable cargo there, and then come direct to Naples for passengers and cargo, being forbidden by law from touching at more than one Italian port.

For the sake of comparison, I take up the consideration of the ships of each line in detail, it being understood that in the description of the fittings I am speaking of the condition of things as I found them on beginning my work, and that in estimating ventilation I considered it as it would be during bad weather, when hatches and other accessory means of ventilation were not available. It is of interest to note in passing that I have been vehemently assured by the masters of certain ships and their agents that, owing to circumstances which they seemed unable to

fully explain, the sea never broke over their decks, and that from year's end to year's end the hatches were never closed. Inasmuch, however, as one of these captains pointed out as a ventilating shaft what a few strokes of a chisel and hammer proved to be a pump well, and some of the others displayed equally astonishing ignorance of the internal arrangements of their own ships, I took the liberty of doubting their statements.

#### COMPAGNIE FABRE.

This company has five vessels more or less constantly employed, and from June, 1892, to June, 1893, had twenty-one sailings and carried some 14,000 passengers.

The berths are located on two decks, upper deck of iron and the lower one of wood without ports. The uprights supporting the bunks are of iron and capable of being taken down and put up very expeditiously.

The bedding consists of a very coarse bedtick filled with a kind of grass; the pillow of the same, and one blanket. The contents of the bedticks and pillows are thrown overboard, and the ticks are sent back to Marseilles to be refilled. The berths are arranged at the sides and also in the center of the compartment. The aisles between the tiers of bunks are narrow. Access to some of the compartments is by companion ways, as required by law, and to others by stairs down ordinary hatches. The steerages are lighted by lanterns fastened against the wall, and giving rather dim light.

The air space is generally sufficient to satisfy the law, but in some compartments there are too many bunks.

The ventilation is sufficient on the main deck, if the hatches could be kept open all the time, but it is generally deficient on the lower deck, the ventilation being too small and being badly placed.

The hospitals in all but one ship are situated on the main deck, just aft of compartments containing boilers and engines. They are of sufficient size, but badly ventilated and reached by narrow, crooked, and dangerous stairways, the equipment consisting simply of bedding similar to that provided in the steerage, with no commodes or similar facilities, and latrines a long way off.

The dispensaries are on the spar deck, just at hospital stairs. They are very well arranged and exceedingly well stocked with medical and surgical appliances.

The latrines are forward on the spar deck, and are in permanent iron walled houses with cement floors. They are of excellent pattern, but the supply of running water is not sufficient in some.

The lavatories are very good. They are situated on the spar deck, and are in permanent deck houses, but no provision is made for washing clothes and only one room is provided for both sexes.

The galleys are of good size and have excellent fittings. The meals are usually served on deck, as there are very few, if any, tables and benches below; so that when the weather is too bad for the people to be on deck they must have their meals in the steerages seated on their bunks. There are excellent facilities for washing the tins on all the ships.

The stores are excellent and abundant as they must be under the French law.

The water is supplied from small tanks on deck furnished with mouthpieces from which the water is obtained by suction, but there is no provision in the steerage for supplying water for women and children during the night, or in bad weather, except on one ship.

#### THE COMPAGNIE NATIONALE DE NAVIGATION.

Employs four vessels. During the "pool year" ending June 15 they carried about 10,500 passengers in eleven sailings.

The ships were all originally fitted up as transports during the Franco-Ton-



quinese war, and retain nearly all of their fittings. They have no cabin accommodations.

The main deck is of iron and the lower deck of wood without ports. Two of the vessels are all one compartment on the main deck from the fore-castle bulkhead to the stern. The other two have more space cut off forward, but are practically open the rest of the way aft. The lower decks, or more properly the upper holds, are separated by bulkheads into four compartments. On the upper deck the bunks are the adjustable iron ones, and on the lower deck they are wooden and only temporary.

Bedding, arrangement of bunks, lighting, air space, ventilation, dispensaries, galleys, stores, and water supply are all about the same as on Fabre Line.

The lavatories are of good pattern, but have very poor water supply.

The hospitals are very roomy and well situated, in after turtle back in two steamers and forward on the main deck on the others; they have bath tubs, and on two steamers closets, but no other fittings except bunks.

#### NAVIGAZIONE GENERALE ITALIANA.

This line, having a fleet of 106 vessels to select from, being, I believe, the largest ocean-going fleet in the world, employs a variable number of ships in carrying emigrants to America. The last "pool year" they employed 9 ships, which made 14 sailings and carried 10,800 passengers. The ships vary so widely in character as to make a systematic comparison with the French lines impossible. They frequently go to New York and then to South America or elsewhere before returning to Naples, and their suitability for carrying passengers is much impaired thereby. Some of the ships are good and some are very bad.

In the arrangement of bunks, the bedding, air space, latrines, dispensaries, stores, lighting, and water supply are all about the same as on the French ships. The ventilation is usually very deficient.

The hospitals are not so good as the French National, but are about the same as on the Fabre ships in character and fittings, but almost universally in bad order.

Some ships have lavatories, but most of the ships are without them. They all have cabin accommodations, but seldom cabin passengers.

#### THE ANCHOR LINE.

This line had 28 sailings the last "pool year," with 13 ships, and carried about 17,500 passengers. The ships of this line are of a great variety of sizes and patterns. Some of them are liners of a generation ago, with all their old cabin fittings removed; others are simply large freighters. A few of them have some cabin accommodations, but practically all are simply freighters fitted up to carry emigrants. They make no regular trips, but usually start from Glasgow, visit some Spanish and Mediterranean ports, go up the Adriatic to Trieste, and return to Naples for their passengers.

The arrangements are quite different from the other lines in many respects. The bunks are all built of wood, and are destroyed at the end of each voyage. They are not usually so crowded as on the other ships, and access to the steerages is by regular or temporary companions, but they are lighted in the same way—by wall lanterns.

The air space is much better than on the lines previously mentioned, which is due to a greater pitch of the decks.

Most of these ships were ventilated for the cattle trade, and consequently their ventilation is much better than on any other line doing business from Naples.

The steerages all have adjustable tables and the bedding is, as on the other lines, very rough but usable.

The hospitals are always temporary, merely a corner cut off from the steerage on the main deck. They have no fittings except bunks, but have sheets, which is not the case on any of the other ships.

The latrines are always temporary constructions, and are apt to be badly designed and built. There is absolutely no provision for personal cleanliness.

The galleys are partly temporary and have very crude fittings.

The dispensaries are entirely absent and they have instead a by no means large or well supplied medicine chest.

The stores are partly from Naples and partly from England and in general seem neither so good nor so abundant as on the other lines.

The water is supplied on deck, as on the other ships, but it is the only line I found having provision for supplying water at night in the women and children's steerage, doing this by means of small syphon tanks about 18 inches high and 14 inches square, fixed in wooden frames. This is perhaps the best form of tanks for the steerage, as it prevents waste and slopping.

#### THE NORTH GERMAN LLOYD COMPANY.

This company only employs two steamers from this port, except in the winter season, when they make a few extra trips with one of their large ships. They have only recently engaged in the passenger business at this port, but since January 1, 1893, they have carried 6,800 passengers in eight sailings. These ships make regular trips back and forth and are never approximately on a schedule. They are regularly fitted up for steerage passengers.

The steerages are reached by companion stairways, have an abundance of large ports, and are lighted by incandescent lights—an immense gain.

The bunk frames are of iron, and the bedding of rather better quality than the other lines.

The air space is about as in the other ships, but the ventilation is a little scant.

The latrines are excellent and are situated on the main deck just forward of stairways, so as to be accessible in all kinds of weather. The washing facilities are represented by two pumps in rooms adjoining closets.

The hospitals are aft, near the cabin, and are readily accessible from the surgeon's room, dispensary, and steerage without going on deck. They are really large staterooms, with basins, etc.

The galleys and stores are excellent and the water is supplied on deck from butts with faucets, also readily accessible below.

Although thousands of female passengers are carried only the German ships have stewardesses.

The question of ship's surgeons demands some attention. On the Italian and two French lines the surgeons usually only ship for a voyage or two, many making only one voyage. Some of them are unmistakably bright, capable men, but a good many of them are anything but impressive. The Anchor Line carries regular ship's surgeons, who are no doubt very capable men, but it is the exception to find one who speaks Italian, so they have to rely upon the steerage interpreter, who is always ignorant and frequently a brute. The Lloyd's vessels carry their regular ship's surgeons, who speak a number of languages.

No mere series of notes like those just given can convey any adequate idea of the multitude of details to be considered in estimating the character of a vessel as to fitness for carrying steerage passengers. The neglect of matters of detail in the fitting out of many of these vessels was astounding.

When the length of the voyage is considered (from sixteen to nineteen days) it is certainly remarkable that the people arrive as well as they do, and speaks volumes for the endurance of the Italian peasant.

The food is generally good and abundant, judged by emigrant standards, and

the water excellent. The fact that the people live on deck is responsible for their good condition. In bad weather, however, when compelled to remain in the crowded, badly ventilated, and often dirty steerages, eating their meals in their bunks for the most part, with closets perhaps inaccessible except by traversing the whole length of the deck, and on many ships without any provision for washing themselves or their linen, the condition must have been bad indeed.

Many of these conditions I have been able to ameliorate, but the existing passenger act is too vague and incomplete to render great improvement possible. It is but just to say, however, that in many ways the conditions were better than I expected to find them.

The merchandise shipped from Naples consists largely of food products, oil, wine, fruits, fresh and dried vegetables, macaroni, and cheese. These articles are clean, well-packed, and give no trouble unless cholera should prevail.

None of them originate in Naples, and very few of them are packed here. Contrary to the general idea there have been no rags shipped from Naples for several years.

All but the German ships usually come partially loaded, so that an examination of the holds is impossible.

The passengers do not usually purchase their tickets direct from the companies, but through licensed emigrant agents, whose subagents in the provinces solicit business and make the preliminary arrangements. When a ship is to sail the passengers are either sent or brought to the city in small parties by the subagents and delivered to the agents. These agents are, in some cases, directly connected with the companies, but in most cases are not, and as far as they can will deliver the passengers to the company offering the best terms.

The people usually arrive the day before the ship is to sail, get their tickets, and have their passports viséed the same day, and go on board early in the forenoon of the sailing day; some, however, go on board the night before.

While stopping in town the people are quartered in a large number of boarding houses. These are of all qualities, some are very good and some are very bad, but the average is better than would have been expected. These boarding houses are licensed by the city and are under police supervision.

Their sanitary arrangements are apt to be very crude, but they are much better than the cheap immigrant and sailor boarding houses in New York.

The majority of the houses are near the railway station, and some distance from the place of embarkation.

Coming direct from their homes in the country, after at most twelve hours' journey, except in the case of the Sicilians, who first have a few hours by rail and then twelve hours by sea, the people arrive in good order. The Italian emigrant is very primitive in his habits, but the popular impression that in his native country he is personally as dirty as many of the emigrants from other European countries is a great mistake. They are a strong, healthy, and usually comfortably clothed race. The healthy, vigorous children are especially noticeable.

My presence here caused the companies to send word to all subagents to have the people clean for inspection, but after making allowance for this I must admit that I was most agreeably surprised at the average of their appearance.

One who only sees these people after they have been herded together for seventeen days on shipboard, or after having established themselves in the slums of our great cities, can form no idea of them as they appear fresh from the country. Hardly 1 per cent of the passengers embarking at Naples are from the city itself, and not more than 10 per cent from towns of any size.

Their baggage also was a pleasant surprise. Leaving out the food, which certainly gave great trouble, the general average of the people had good, clean clothing in their valises and trunks; of course there were lots of old working clothes, but that was natural, and such articles do not make bad baggage.



In a great majority of cases there was a sufficient supply of good, clean linen, underclothes, and socks. Some of them, however, had very little baggage, if any, and I remember one man whose luggage consisted of a handkerchief full of lemons and a green umbrella.

The ships lay at anchor about a quarter of a mile or more from the quay, and the passengers were put on board by means of rowboats, from one to eight in a boat. For conducting the emigrant to the landing and putting him on board it was customary to charge him 1 lire if he had only small baggage, and 1½ lire if he had a trunk. This was a prerogative of the broker's clerk, who, in turn, paid 25 centimes a head to the boatman for taking the passenger out to the ship. Here again was a "vested interest" strongly opposed to any change in the existing methods.

On the day of sailing the ship was visited by a commission, consisting of a deputy captain of the port, commissary of police, and the health officer, or one of his deputies.

The commission was accompanied by armed guards, who first mustered all the passengers on deck, and then made a careful search for stowaways. When all was in readiness the passengers were driven aft or forward, and then made to pass, one at a time, past the commission. This arrangement was most reprehensible. I have seen 1,400 men, women, children, and babies herded on the crowded forward deck of a ship, in the full glare of a southern sun, and kept there for seven or eight hours, usually without food or water, the women compelled to sit upon the dirty deck, and children and babies crying for food and water, without attracting any attention from anyone. Those who were passed had to wait on deck, aft, until all were through; so that if the closets happened to be forward, the people were cut off from access to them. I have more than once seen a mother vainly trying to hush her children who cried for water, and sometimes women were seen to suck water from the siphon water tanks and spit it into cups for their children. On these and other similar occasions I have quietly pressed a couple of sailors into service and superintended the distribution of water without interfering with the labors of the commission.

Each passenger had to pass in turn the inspection of the port surgeon and ship's surgeon, and up to the time I began vaccinating inquiry was made as to previous vaccination. Sometimes those unvaccinated were vaccinated, but usually after the first few score or so had passed the rest were left for the ship's surgeon to vaccinate at sea.

The medical examination varied very much in value, according to the officer present and the number to be examined. As it was the exception for the commission to begin work before noon, it can readily be seen that a very thorough examination could not be made of from 800 to 1,400 people in the short afternoon of a spring day.

Taken altogether this examination was never more than cursory and toward the last of the day the people often went by almost too fast to count.

No attention was paid to the recent whereabouts of passengers, or to the character of their baggage.

After my examination was established the work of the commission became still more superficial, and I remember having seen the medical officer sound asleep in his chair for an hour while the procession moved by—an evidence of faith in the efficiency of my examination that I greatly appreciated.

After passing the doctor the passenger presented his passport to the police officer. Here the scrutiny was rapid but thorough. The officer had at hand a list of all the persons whose passports had been viséed for that ship, and a bundle of telegrams and papers, with descriptions of persons wanted. These embraced absconding debtors, criminals with uncompleted sentences, men of military age

not legally exempt from service, etc. These were arrested, but no attention was paid to those known to be criminals, but against whom no charges were then pending.

The port surgeon or his deputies also visit each emigrant vessel upon its arrival and make an inspection, to see if she conforms to the terms of the law. They also inspect the food supply, samples of all stores being artistically arranged for inspection on a neatly spread table.

It will be seen that the station law duplicates our own in many respects. I am sorry to say, however, that its execution is hardly up to the high standard contemplated.

The fact that it was possible to secure official sanction for carrying passengers on a ship in which the between-deck compartments were without any ventilators, or in which the closets were not provided with running water, absolutely no provision made for washing, or hospitals habitually used as miscellaneous storerooms, tells its own story.

The city of Naples has a population, in the limits proper, of about 635,000, but the populous suburbs which are contiguous with the city and indistinguishable from it swells the total to about 700,000.

It is curious how strong a hold the idea that Naples is an exceedingly dirty and unhygienic city has upon the minds of all Americans.

Any newspaper man will write "glibly" of "Neopolitan slums" and "swarming lazzarone," and no amount of argument or presentation of facts makes any impression upon the prejudice.

As a matter of fact, Naples is very much cleaner than any large American city with which I am acquainted, and the slums, as a whole, do not begin to be as bad as those of several of our cities.

There is in Naples an immense poor population and those people live in a very primitive fashion and in utter disregard of the laws of hygiene. But there is very little of the squalor and wretchedness that are so common in our own slums.

The principal streets are better kept than most of principal streets in New York.

It is true that the death rate of Naples, from 32 to 39 in 1,000, is a high one, but a study of the mortality report shows that this is not due to the so-called "filth diseases," but to a large infant mortality among the poor and to diseases of the digestive tract attributable to bad and insufficient alimentation. From 30 to 45 per cent of the deaths are of children under the age of 5. From the middle of January to the middle of August, seven months, there were 12 deaths from scarlatina, 14 from smallpox, and 67 from diphtheria. There was an outbreak of measles in the spring and also one of typhoid fever, so that the figures for these diseases, 92 and 103, respectively, are much higher than normal.

Up to the great cholera epidemic of 1884 Naples undoubtedly deserved her evil reputation. Since then the improvement in the hygienic condition has been almost unparalleled.

The first great improvement was the introduction of the Serino water. This water is derived from what is practically an underground lake, situated among the mountains, at a very considerable elevation, and some 50 miles from Naples. It is piped to the city and stored in a reservoir on a hill commanding the entire city. It is as clear as crystal, sparkling, and just hard enough to be palatable. I have never seen any water supplied to a city or town that compared with it in quality. The supply is practically unlimited. In all the poor quarters there are hydrants every 25 or 30 yards that run continuously. The water from these is delightfully cold, and as sparkling as from a mountain spring.

Within a year after the introduction of water the death rate from diarrheal diseases fell about 90 per cent.

The next step was the wholesale demolition of the worst slums, and the substitution therefor of broad streets and handsome buildings.

The sewer system has been almost completely reconstructed and when it is finished will be one of the best in the world. All sewerage will be delivered into the sea at a point some 5 or 6 miles from the city.

The sanitary organization is as follows: The city is divided into districts with a sanitary officer in charge of each. These have assistants whose business it is to keep track of all sanitary matters and report on them to the district officer. The district officer reports to the chief sanitary officer of the city, and he in turn to the chief sanitary officer of the Province.

The penalties for failure to report contagious and infectious diseases are very heavy, and can even amount to the revocation of the offending physician's license.

Vaccination is compulsory and free. Every child must be vaccinated before reaching the age of 1 year, and before its second year must be again brought for inspection of the scar.

Though the system is faulty in many details, it seems efficient on the whole.

The medical control of the port is not in the hands of the city, but of the port officials. Every vessel is boarded at the entrance to the port. I have never been present at these examinations, but, from the time consumed, they must be very superficial.

Vessels having the ordinary contagious or infectious diseases aboard are sent to the quarantine station on the island of Niseta, about 10 miles by sea. There the sick are disembarked, and the vessels seldom, if ever, detained. If cholera has occurred on board the vessel is sent to Asinara, an island on the Sardinian coast, where the Government has a large quarantine station. During the months of June and July, when cholera was very prevalent in Marseilles, there was approximately no restriction placed upon the landing of either persons or their effects.

There were biweekly and other steamers arriving from Marseilles during those months, but as far as I know there were no precautions taken except the disinfection of the dunnage of the crews.

The methods of handling emigrants here at the time of my arrival have been already described. The improving of them in any direction has been a work of considerable difficulty, but I am glad to say that nearly all the objectionable features have been removed or are on the way to removal. Not only had the natural indisposition of the companies to inaugurate improvements that necessitated expense to be overcome, but the situation was further complicated by the fact that there were five companies to deal with, and united action was often impossible to obtain. Another disturbing factor was the influence of the brokers and subagents. This could be relied upon at all times to do what it could to obstruct reforms. But above all other obstructions was that of the *vis inertia* of long-established custom, the strength of which can hardly be appreciated by one unfamiliar with Neapolitan business methods. It had always been the custom to embark the people by small boats. To venture to change would be revolutionary.

In order to show the force of custom here I take brief space to recount the experience of the city a few years since with the men who peddled water for horses.

The authorities decided the peddling was a nuisance and constructed, all over the city, suitable iron drinking fountains, where water was to be had free. But holes mysteriously appeared in the basins, or the pipes were stopped, or something else occurred to render the fountains useless. This went on for some time, until the city gave in, made the water sellers a present of the expensive fountains, and permitted them to keep a representative at each to exact the customary fee. So that in Naples, where perhaps the finest water in the world runs freely everywhere, a premium is put on cruelty to animals by the levying of tribute on their thirst. In a city where such conditions prevail it goes without saying that reforms in business methods are always difficult.

Immediately after my arrival I called a meeting of the agents, and went over the



law and regulations, section by section. In this meeting and in forming the estimate of the work before me I was greatly assisted by Dr. Walter Kempster, who was then in Naples on a tour of investigation of European ports for the Department.

On looking over the field and conferring with Dr. Kempster, I reached the following general conclusions:

1. That no satisfactory medical examination could be made aboard ship.
2. That it was useless to attempt to change everything at once, and that a proper examination of passengers and baggage being assured, the first thing to be taken up in improving the sanitary condition of the ships was the securing of general cleanliness, sufficient air space, and adequate ventilation, the rest to come later.
3. That I needed competent assistants.
4. That my position was a very peculiar one as concerned the Italian authorities and my real official status rather indefinite, and that this latter fact was an advantage rather than not. Not having a status relieved me of the necessity of keeping within prescribed limits and left me free to adjust myself according to the necessities of the case. I therefore decided it best to first get the work under way and then call upon the authorities, my assumption being that they would probably wait to see what I was going to do before interfering; and if matters were under way the chance of their taking any action was much less than if I first called and explained my mission.

The first and third points I brought up in the first meeting.

When I announced the medical examination would have to be made on shore, I was met by an united chorus of assurance that it was absolutely impossible. The authorities, the impracticability of securing a place for the examination, the impossibility of controlling the people, etc., were alleged against the plan. I held my ground, however, and in less than three minutes the gentlemen present had arranged to comply with the requirement. I have since been told that the possibility of such a requirement being made had been discussed by some of the agents before the meeting, and the place to be used, if the demand was insisted on, decided upon.

In regard to assistants, I explained that if I did the work of examining the passengers and baggage alone it would necessarily be very, very slow, and that if the companies were willing I would nominate men as inspectors, their compensation to be arranged between themselves and the companies. The corps as first arranged consisted of Mr. R. O'Neil Wickersham, whose familiarity with localities and customs, gained in some twenty years' residence in Italy, as well as his knowledge of dialects and languages, made him invaluable, and Mr. P. S. Twells. To these was afterwards added Mr. Rutherford Twells, and I am sure no one could ask for more singleness of purpose in devotion to duty and untiring industry than was shown by these gentlemen in the discharge of their disagreeable and arduous duties. Dr. Cerio was appointed assistant medical inspector the latter part of May, and to him and the other gentlemen previously mentioned is largely due any success achieved in handling the emigrants at this port.

Work began on April 10. Between that date and August 1, a period of one hundred and twelve days, there were carefully examined 28,151 steerage passengers. As sailings were suspended during a week of this time, and no examination made on Sundays, this gives an average of 317 a day. The examination was done rapidly, but carefully, and included an examination of each individual's passports, as a control of his previous whereabouts, the stamping of his passport and inspection card, verification of the identity of the individuals when any cause of doubt existed, and a comparison of the number and age of the persons as described in the steamship tickets with the same data as given in the passports.

In all 11,297 were carefully vaccinated. There were 32,579 pieces of baggage thoroughly searched, many hundreds of pieces of dirty bedding and many hun-

dred pounds of food being found and rejected. There were 1,217 pieces of baggage disinfected. In all about 150 persons were rejected, a very marked testimony to the uniformly excellent physical condition of the Italian peasant in his native country.

The data of rejection for the first two months was unfortunately lost, so I can only approximately give the causes of rejections. They were almost entirely for favus, a few for phthisis, and a few for syphilis.

For the transportation of these passengers 40 vessels were carefully examined, and in nearly every case altered more or less extensively to comply with the law. It remains now to be seen how the work was done.

It has been four months of a continued and never-ending struggle against all sorts of obstacles, and while the resulting improvement in methods is quickly summed up I hope the foundation is now laid for really great advances. It is to be remembered that practically everybody, from the agents down, with some honorable exceptions, was in league to prevent any reforms, and that with 500 people a day to handle there was not much time for anything else.

The entire water front is a reservation under the control of the General Government, and is not a part of Naples at all. The city authority ends at from 50 to 100 yards from the water. All land within this belt can only be used after securing an official grant. There are a few sheds for storing purposes thereon, but the only building available for the examination of the emigrants was a small brick structure situated about 25 yards from the point where the emigrants embark. This building was used as a storehouse for baggage by some parties holding a "concession." It was about 40 by 20 feet and divided into three rooms, with large double doors on front of each, and doors of communication in the partitions. Only two rooms could be procured at first, and they were arranged as shown in accompanying diagram. The people passed in as shown, and the admissions were so regulated that each one in turn walked slowly forward from the point *x* to the inspector at *a*.

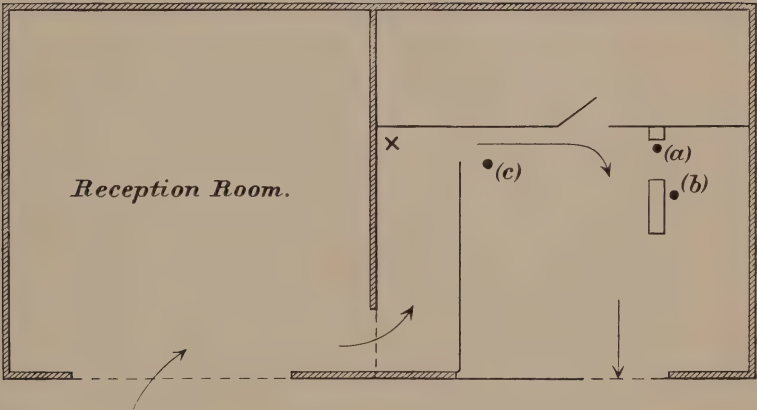
At the same time an attendant took his passport at (*c*) and handed to the clerk at (*b*), who stamped it with the service seal. Those who seemed to need looking after were put inside in the detention room for a more careful examination. The examination of the passports gave a reliable check as to the passenger's recent whereabouts, for the Italian peasant is not much given to wandering, and it was moreover the only check we had against impersonation. By stamping the passports and then seeing that no unstamped ones were presented to the Italian commission, we had a fair check against substitutes, but by no means an absolute one. When the inspection cards were introduced it gave another, but still not absolute, check. The best check was the vaccination.

After the introduction of the inspection cards I continued the examination and stamping of the passports as a means of ascertaining recent whereabouts, assisting the control, and for the following reason in addition.

The passenger act takes no account of children under 1 year in estimating air space and counts children "from 1 to 8" as half places, so the companies charge accordingly. It therefore frequently happens a child is presented as under 1 or 8, respectively, when his age is considerably more. The number of children under 1, who walk in by themselves and can boast full sets of teeth is astonishing. On the steamship tickets the number of full and half places is given, and by comparing this with the passports, I have sometimes found as many as 25 more places in a ship load than the tickets called for—a very considerable item when it is considered that all the ships, when full, are just about up to the legal limit of crowding.

When the examinations were first begun it was very much like trying to handle a herd of stampeded cattle; even the presence of police officers failed to keep the crowd about the building in order. Little by little, however, the attendants became accustomed to handling the people, and, after infinite trouble, the examination came to be conducted noiselessly and expeditiously.

DIAGRAM.



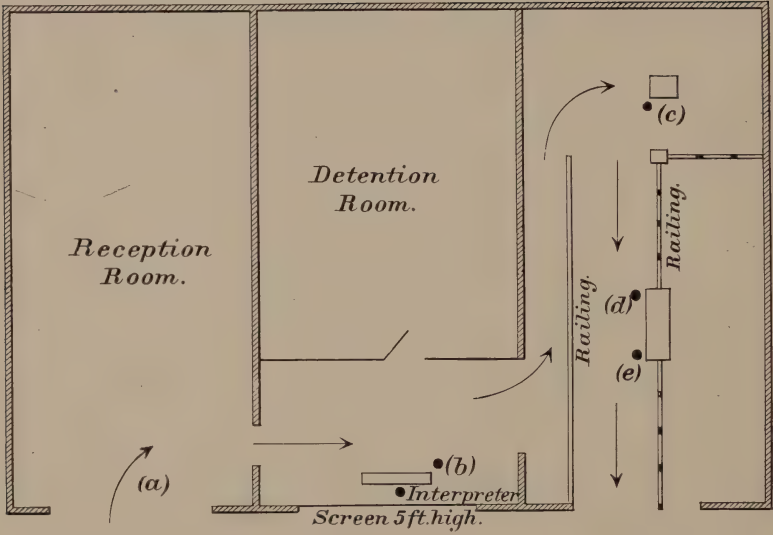
Face page 126.







DIAGRAM.



Face page 127.



At his visit in May Surg. Wheeler succeeded in getting for us the use of the third room, and subsequently other improvements were added in the way of broad awnings, better furniture, and an adjustable fence for regulating the crowd outside.

When emigration was suspended the arrangement was as shown in accompanying sketch.

The people entered at (a), passed into the middle room one at a time, where they were examined; had their passports and cards stamped at (b), and then entered the third room, where their arms were washed at (c), and passed on to (d), where they were vaccinated, and had their cards stamped again at (e).

They were then conducted directly on board and had their baggage inspected, no one being allowed to come on board without the inspection cards properly stamped.

I first thought of examining the baggage on shore, but quickly saw that I could not control it at all.

The examination was then arranged as follows, and it has continued the same:

Tables were arranged on the ship's deck so that the people, on coming on board, had to pass in single file by the inspectors. Each passenger opened his hand baggage and placed it on the table for examination.

I determined from the start to reject all food found in luggage and on persons of passengers, and to also reject all bedding not entirely new, except on the French ships, where excellent disinfection machines made it possible to disinfect and return to the owners.

The people had been in the habit of bringing large quantities of cheese, sausages, and bread with them, often large boxes, both for their own consumption and to try to smuggle into America for their friends. I considered that if the practice could be broken up, and that I could be sure that the passengers would have access to no food supplies other than the ship's stores, it would be a very great gain and remove a very considerable source of danger.

Each valise was therefore rapidly but thoroughly searched, and all food found thrown out. In addition, a man standing in the passageway sounded the pockets and other receptacles for contraband articles.

We rapidly became very expert both at passing baggage and in detecting smugglers. It was not uncommon to find a man with the back of his shirt filled with small cheeses, or a woman with a girdle from which depended festoons of sausages under her dress. At first literally hundreds of pounds of food was confiscated. This could not be taken back to the city on account of the customs, and the people objected to the bumboats getting it if thrown overboard; so we burned it in the ship's furnaces. The same was true of the bedding. At first there was a great deal to throw out, but toward the last there was practically no food or bedding, and this was a great boon when disinfection and isolation became necessary.

While the passengers were having their small baggage examined the large baggage was passed on board by a separate gang and arranged in a roped inclosure on deck, and when the owners had passed with their hand baggage they came forward and opened their trunks.

We began by marking each piece examined with colored chalk; afterwards each piece was labeled as soon as inspected.

This baggage inspection was exceedingly laborious. It was under the charge of Mr. P. S. Twells, assisted by Mr. Rutherford Twells. When not examining emigrants Mr. Wickersham, Dr. Cerio, and myself all took a hand, and, indeed, when several ships were about to sail at the same time we were all needed. The opening and thorough inspection of one thousand pieces of baggage takes some time, and we were usually greatly handicapped by the stupidity and incompetency of the men furnished by the companies to assist.

Immediately after beginning the examination it was seen that no possibility existed of properly controlling the people as long as the system of embarking by small boats existed. The ships, lying about half a mile from the quay, were surrounded by a crowd of bumboats of all descriptions and overrun by water sellers, mendicant friars, and all manner of peddlers.

No sooner had a passenger passed the medical examination than he posted off to his boarding house and stayed there as long as the boarding-house keeper could make him. Hence it resulted that about 6 o'clock every evening there would be from 300 to 500 people all waiting to go on board at once with their baggage. To break this up I refused to work after 6.30 and had my inspectors withdraw, leaving the people to go ashore and return the next morning. This finally had its effect, but there was always more or less trouble.

Strenuous efforts were made to get the companies to use lighters and take the people direct from the examination, but with only partial success.

The agents admitted that it would be a great gain in time and convenience, but all alleged it would be impossible to do otherwise than they had always done. The fact of the matter was the clerks of the subagents, boarding-house keepers, and boatmen were all interested in preserving the custom as it was, and the companies were afraid of the combination.

When the ships finally came to lie at the quay the attempt was actually made to embark the people in small boats at the landing stairs and row them along the water front for a quarter of a mile, when there was nothing to prevent their having walked on board unaided. Even when I broke this up the clerks continued to collect a lira a head from the passengers and to pay the boatman his regular fee for doing nothing.

We got rid of the peddlers and bumboats and substituted lighters in part for the rowboats, but as long as the ships were out in the harbor we could never suppress the vexatious system altogether.

I found that the French ships had excellent live-steam disinfecting chambers and the two German ships smaller ones of a very inferior pattern, but that the Italian and English ships were entirely without any such appliances.

Strong representation to the companies failing to produce any effect, and having had considerable unsatisfactory experience with sulphur, I finally issued a circular, about the middle of June, announcing that in future nothing but live steam would be accepted.

The companies then appointed a committee to take charge of the matter, but there was trouble in procuring a site and other delays. At the time cholera appeared a concession from the Government for a suitable site had been secured and plans prepared under my direction for a suitable building, to embrace a large hall, examination and detention rooms, bathrooms, closets, and a fine steam disinfecting chamber capable of containing the contents of 250 valises at once. Work was to have begun at once, but the cessation of emigration has stopped everything for the time, and I am unable to say whether it will be resumed. Certainly if there is any way to wriggle out of the necessity the work will never be completed.

As already stated, the sanitary condition of the ships left much to be desired. No part of the work has caused as much worry and trouble as the attempt to get the ships into satisfactory order and keep them so. In trying to put these matters straight I have been greatly handicapped by the ambiguity and insufficiency of the passenger act of 1882. The necessity for certifying to the "good sanitary condition" of the ships in the bill of health was the only lever I had to work things with for the enforcement of the provisions of the passenger act, and belongs properly to the custom officers, who seem to give the matter no attention at all.

The sum of the improvements effected seems disproportionately small compared to the efforts expended in making them,

Adequate ventilation was provided on about all the ships, the character of all the latrines very much improved, and proper water supply secured; where lavatories existed provision was made for separation of the sexes; where there were none, rough but servicable troughs were provided, and one of them supplied with wash bowls and set apart for laundry purposes. Suitable water tanks were placed in women's and children's compartments; also commodes for night use. The stairways to hospital were changed so as to be practical for the sick, or doorways made through the bulkheads to render them accessible from the steerage without going on deck. Commodes were provided in hospitals; also tables, washstands, slop buckets, etc. Serviceable tables and benches were put in steerage, and many other details attended to. Indeed, the great bulk of the sum was expended in looking after a multitude of details too trifling to mention separately in a report, but in the aggregate of importance in preserving the comfort and health of the passengers. These matters were not put right without many struggles and conflicts with the ships' people. I have been repeatedly assured that there was no use providing a place for the people to wash, as they would not avail themselves of the opportunity, but have noticed when the washing troughs were put in the people hastened to use them. I had to make extensive changes in the ventilation of many of the ships; in several instances had to suppress a compartment entirely.

The worst ship handled was the *Chateau Lafitte*, an old Atlantic liner, chartered by a firm of emigrant agents. In this ship there was a compartment on the main deck berthed for 200, and having only one 12-inch ventilator forward. On the between-decks there was one compartment for 52 without any ventilation, and one for 230 with only one 7-inch ventilator forward. Some of the other ships were very little better.

Especial attention was given to the water supply from the first, and all ships required to refill their tanks with the superb Serino water at Naples. In the case of vessels coming from Marseilles I personally saw that the tanks were emptied.

In addition to the two formal inspections, the first before passengers or cargo were embarked, and the second just before clearing, it was my custom to visit the steerages and other portions of the ship at odd times, unaccompanied by officers or agents, and I occasionally made some interesting discoveries.

In the latter part of May there were five ships and about 6,000 passengers on hand at one time, and fearing that I could not do justice to them all, I cabled the request that Surg. Irwin might be ordered from Marseilles to take charge. Upon his arrival Surg. Irwin assumed charge of the medical inspection of the passengers, and assigned me to duty in connection with the preparation of the ships, supervising of cargo, and inspection of baggage. This plan worked admirably, and demonstrated clearly the necessity for two medical inspectors.

While detailed as just stated, I was able to expedite the embarkation of the passengers very much and to prevent the smuggling of bedding and other contraband articles into the holds, either for shipment as freight or for the purpose of temporary concealment. On one occasion I saw from a neighboring ship a bale of very dirty mattresses and bedding being passed into a vessel's hold. I said nothing about it at the time, but when the ship was ready to clear I withheld the bill until the stevedores were sent for, the cargo partly moved, and the bedding taken out. After this I had little trouble with bedding. In innumerable other small matters the more or less continual presence of an inspector about the ships was an advantage. Surg. Irwin remained in charge about three weeks, and on being ordered to rejoin his station Dr. George Cerio was appointed assistant medical inspector and is still serving in that capacity.

In consequence of the appearance of smallpox on the steamship *Alesia* while en route for New York, we began on the 20th of May, under Department orders,



to vaccinate all passengers. This greatly increased the work, but I think was the best plan, the vaccination aboard being exceedingly untrustworthy. The companies were required to furnish the virus, and here again we had a continual struggle with purveyors to get honest service. Forgery of the signature of the superintendent of the vaccine farm, erasure and change of date upon the packets, and other frauds had to be continually watched for. A very large proportion of the passengers had been previously vaccinated, but we decided not to take any chances, so vaccinated all but very recently vaccinated small children.

About the end of May Surg. Wheeler visited Naples on a tour of inspection and remained about a week. His presence strengthened my position a great deal, and his energetic representations to the companies secured better facilities for the examination.

During the spring the Government authorities had a large shed erected on the quay for the examination of passengers by the port commission, and a channel dredged deep enough to allow all the ships to go alongside. The shed was of sufficient size to accommodate 1,200 or 1,400 passengers and was very conveniently arranged for the purposes of their examination. The companies tried to obtain permission to use the building when not required for Government purposes, but did not succeed.

This shed was first used the middle of July, and its use was an immense advance; no friend of humanity could fail to rejoice that the days of the examinations as held on board the ships were over. It was also a grand gain for us. I was able to insure the prompt delivery of the people on board as soon as they had passed my examination, and the work of inspecting and labeling the baggage was very much expedited.

On July 15, the steamship *Karamania*, of the Anchor Line, cleared for New York with 465 steerage passengers. They were all carefully examined and vaccinated and all food excluded from their baggage. They were all Italians (with the exception of some thirty Greeks) partly from the neighboring provinces and partly from Sicily. The people had been in town from one to three days in the ordinary emigrant boarding houses. On the night of the 16th two cases of illness of a suspicious character were reported to the authorities. On the next morning there was another case in Portici, a suburb continuous with the city on the east; that day, the 17th, there was another one in the adjoining section to the one where the first cases occurred. The same day a sailor, returned from leave, died in the naval hospital. While these were the first cases known to the sanitary authorities of the province, it is the opinion of the chief sanitary officer that there had been previous cases, and the fact that cholera developed on the *Karamania* on the fourth or fifth day out makes it practically certain that he is right. Indeed, I have since discovered that there were two cases reported to the municipal authorities about June 1, and that the information was withheld from the principal authorities. These two cases were not followed by any others, however; so it seems settled that the subsequent outbreak was of independent origin.

The result of the bacteriological examination in the first case was discovered accidentally by Dr. Cerio, who had been instructed to keep on the lookout for such matters, on the morning of the 18th.

I had just completed the preliminary examination of the steamship *Massillia* when the news reached me. While the occurrence of four cases of cholera in a population of 600,000 did not make of Naples an "infected port" in the meaning of the regulations, I decided to take no chances, so cabled the Department the facts, and at once made inquiry as to the whereabouts of the *Massillia's* passengers. Luckily none of the people had arrived in the city, as the ship was not to leave until the 22d, and I was able to make arrangements by which the people could be met at the station and conducted directly on board with unopened baggage. On

arrival at the ship they were carefully looked over, and both passengers and baggage rigidly searched.

The crew were confined aboard.

We had considerable trouble at first with bumboats, but by keeping sailors with hot-water hose, at several points on both sides of the ship, managed to keep all undesirable people away. Otherwise the passengers would have gorged themselves with bad fruit, uncooked salads, etc.

At night the ship was warped out some 50 feet from the quay, all gangways closed, and guards stationed. Absolutely no one except our inspectors, the agents, and the necessary clerks were permitted to board the ship.

In the meantime, on the 20th, I called upon the prefect to request information.

The "capo di cabinet" at once admitted that there had been four cases of cholera early in the week, but stated that there were no others, and that if I could send to the prefecture I would be, unofficially, kept posted. I was much reassured by this, but still thought best, as just narrated, to be careful about the *Massillia*.

Just as the ship was clearing, I learned from unimpeachable authority that there had been 16 cases and 9 deaths since the 17th. As none of the passengers had stopped in the city or had contact with infected persons, I cleared the ship. The result justified my action.

The authorities then began a careful policy of suppression. Private and press telegrams were refused, and all news withheld from local papers. I therefore organized, with the invaluable assistance of Mr. Wickersham, a system of private news gathering.

In order to have a check we arranged for several distinct sources of news.

This system has worked admirably and was afterwards extended to one of the neighboring towns.

The probable origin, course, and management of the cholera outbreak does not properly have a place in this report, and it is merely necessary to note that the disease rapidly and almost simultaneously invaded a great number of the districts from which the passengers came.

In default of other facilities, no barracks being obtainable, I arranged to isolate the passengers for the *Weser* and *Cachemire* aboard, first arranging to reject utterly all from Naples and vicinity, and to have both passengers and baggage transferred direct from station to ship.

I also had manifests of stores to be embarked submitted to me, substituted live for dressed beef, and had potatoes and other similar stores shipped in from points outside the city. The crews were rigorously confined aboard while in port, and the ships lay in isolated position from half to three-fourths of a mile off shore. The passengers arriving in small parties during three days made them easier of control, but greatly increased the work of inspecting and caring for them.

As the passengers had not been in any way in contact with infected places or persons, I decided to omit the bath and disinfection of outer clothing, the people being an exceedingly cleanly and well-clothed lot.

The period of isolation was reckoned from the time of the arrival of the last passenger aboard.

On the *Weser* I inspected and vaccinated 991 steerage passengers.

Preliminary to disinfection I inspected all the baggage and threw out a small quantity of food and old bedding. In this connection I again take occasion to call attention to the good results of the policy inaugurated in April, of rigorously excluding all eatables and bedding, even to the extent of searching the individuals.

The knowledge of this rule has almost stopped the attempt to smuggle anything aboard.

The North German Lloyd Company, to which the *Weser* belongs, considered it better to have the ship cruise about the bay and vicinity with my inspector on

board, returning every day for my visit, than to have her lie at anchor in the harbor. In this I heartily concurred.

The large baggage, except some belonging to a cabin passenger from Naples, was not steamed, it having been transported "in bond" from station to ship. Thirty minutes' exposure (about 3 pounds pressure) was used for all hand baggage. The *Weser* began her period of isolation on the 26th; the next morning she returned to the harbor for my visit, but was met by the police boat and ordered to sea at once.

She accordingly stood off and on at a distance of about 150 miles. On the 31st she returned on the plea of shipping an extra doctor, the company having directed such action as an extra measure of precaution. I then boarded her and made a careful inspection. She was in admirable order throughout, and my inspector reported that she had been maintained in that condition during her cruise. The people were all well and cleanly. I therefore issued the bill of health, stating fully thereon the circumstances attending the isolation and disinfection.

The reason for the action of the authorities was that the semaphore stations along the coast were signaling to know the reason for the ship cruising about the bay and vicinity, and the explanation might have interfered with the policy of suppressing the news.

The passengers for the *Cachemire*, some 208, were embarked on the 25th and 26th, under the conditions already stated. Just as the work of disinfecting the luggage was half completed (dry steam at 105° C., 4½ pounds pressure being used), a letter was received by the consul, Mr. Twells, from the prefect, in which he stated that he was informed that I was detaining people on board ship, and that such a measure was either an act of quarantine, and as such an infringement of the prerogatives of the Government; or else an imprisonment without warrant of law. Neither being permissible, he desired to know if his information was correct, in order that he might take the necessary steps.

Mr. Twells referred the letter to me for reply, and I at once wrote the prefect that I was fully aware of the objectionable features of the plan and had only adopted it in order to dispose of the ships then on hand, and that under no circumstances would I have anything to do with such measures in future without his consent.

In accordance with the terms of my answer, I withdrew my inspector from the *Cachemire*, but transferring him to the *Danzig*, which was laying near, was able to be sure of the maintenance of the isolation. The *Cachemire* was about a mile from shore, and it is due to the officers and company to say that the most rigid steps were taken to maintain the isolation.

There were a series of negotiations on the subject of the prefect's order. The French consul finally received permission for the work on the *Cachemire* to be completed. She accordingly completed her five days without anything occurring. I was on board most of the time and had excellent opportunities to observe the condition and care of the people. She sailed in the 1st instant and arrived all well.

While the *Cachemire* was under treatment, I examined, at the request of the North German Lloyd Company, some 370 passengers for the *Werra*, who were taken from here by the *Danzig* to Genoa. It was arranged by Dr. Brown that the time spent at sea should count in the period of isolation. I also had all their baggage and clothes carefully searched for food and other articles which might give rise to infection.

While the *Weser's* people were being embarked, the S. S. *Hesperia* of the Anchor Line arrived to take passengers. I made a preliminary visit to the ship and found that the alleged steam chamber was only dry heat and moist steam. In reply to the agent's inquiry, I told him that the people were better on board than ashore,



but that I saw no reason to believe his ship would go. This was on the 26th instant.

When the authorities forebade further isolation, the *Hesperia* continued to embark passengers, but in accordance with my promise to the prefect, I refused to have anything to do with her. Just at this time the *Krön Prinz* came in, and the suggestion was made that she be cleared from Salerno. I furnished the company with the following code of rules to be observed:

#### NAPLES, JULY 29—SHIP TO SAIL AUGUST 11.

##### 1. *Crew.*

(a) If possible ship no one at Naples. If any must be shipped, all baggage and dunnage to be disinfected.

(b) Confine as closely as possible while in port seven full days before embarkation of passengers. Confine absolutely if in port of Naples.

##### 2. *Cargo.*

(a) If macaroni is embarked at Naples, must furnish custom-house papers showing transport "in bond by rail from uninfected point of origin to quay."

(b) Embark no fruit at Naples.

##### 3. *Passengers.*

(a) Take none from districts whose natural or possible route would take them to Naples or vicinity. (Note.—All passports being examined, a reliable control is had over places of origin.)

(b) Have passengers at Salerno on day before sailing.

(c) Take no one from Naples to Salerno except agents themselves or their immediate representatives and members of consular staff.

##### 4. *Food supply.*

Take absolutely no fruit or vegetables from Naples and vicinity, and submit invoices of other stores before embarking.

Salerno being on the other side of the Sorrentine peninsula, with lofty mountain ranges between it and Naples and the scantest of intercourse with that city, it was a very good port of embarkation, especially as more than half the passengers could be brought up from Sicily by sea.

It was of course first necessary to obtain Government consent, as only Genoa, Naples, and Palermo are licensed as emigrant ports. Pending these arrangements, your cable ordering five days' isolation at all Italian ports was received, and the project was abandoned. The plan seemed a good one at the time, but subsequent developments made it plain that it might have been risky.

Great pressure was brought to bear to get the authorities to give the written permission I demanded, and also to induce me to waive the written permission. Failing to obtain their ends the companies sent representatives to Rome.

As a result the ministry ordered the granting of the permission, and a letter to that effect was received by the consul.

During all this time the *Hesperia* had been at anchor a mile and a half offshore, probably rigidly isolated, but of course not under my observation; there had been several outbreaks of discontent among the passengers at their long delay. The company had built a superheater on deck, and converted the iron-walled ice house into a disinfecting chamber, in which 5 pounds pressure with superheated steam could be obtained. I first steamed all the bedding and then proceeded with the bathing and disinfecting.

For the former I had the four large lifeboats, some 16 feet long, secured on the

hurricane deck and inclosed with canvas screens. For the women a number of tubs were brought on board and a trained nurse engaged to take charge. When operations began a riot broke out among the passengers, upon which I withdrew my men and refused to do anything until the Italian authorities adjusted the matter. This they did, the captain of the port giving his word that they should go in five days.

The next morning there was another outbreak, upon which the Government officials divided those who were willing to have their clothing disinfected from those who preferred disembarkation. Out of 400 only 142 desired to stay it out; but the arrival of orders to refuse bill pending arrival of *Cachemire* and *Weser* made further work unnecessary.

I made the best apologies possible to the port officials for having unintentionally placed them in a false position, and I desire to record that at all times my relations with all of them have been most cordial. While this was in progress I had arranged as follows about the *Krön Prinz*, which was to have sailed on the 14th instant, and some of whose passengers were already on the way to Naples at the time your message of the 7th arrived.

The passengers were to be met at the station with omnibuses and transferred directly to the steamship *Danzig*. Then they were to be examined, vaccinated, bathed, disinfected, and isolated for five days. At the conclusion of the five days the passengers were to be put on board the *Krön Prinz* and the ship cleared.

I respectfully submit that isolation on a tender properly equipped with bathing and disinfecting appliances and lying a mile from shore is very much superior to the ordinary barracks, both from the standpoints of the passengers' welfare and that of the efficiency of control. As the order to withhold bill until the *Weser* and *Cachemire* arrived would have entailed great delay, the company abandoned the sailing.

The decision of the Department not to accept isolation on a tender practically suspended emigration from this port on August 8, and I have therefore, as already stated, extended the scope of this report to include that date.

It may not be amiss to include here, for purposes of comparison, a brief notice of the effect of the precautions taken with the *Massillia*, *Cachemire*, and *Weser*, and the fate of the other vessels leaving Naples about the same time for North and South American ports.

From the 15th of July to the 17th of August there were eight vessels left Naples with steerage passengers. On the first of these, the *Karamannia*, the passengers and baggage were inspected, but no other precautions taken, the health of Naples being good, as far as I knew.

On the voyage cholera developed, and there were, I believe, some nineteen cases in all, with seven or eight deaths.

Of the remaining seven, three, the *Massillia*, *Cachemire*, and *Weser*, were carefully handled, passengers isolated, baggage disinfected, and food supply regulated. All escaped infection.

The remaining four all cleared for South America without precautions.

The *Carlo Regis* left Naples on the 31st of July. She arrived at her destination with cholera, was turned back, and has just completed her detention in quarantine. She lost 201, of which 100 were from cholera and 101 from measles. As it is reported that her doctor was ill on the voyage it is extremely probable that many of the "measles" deaths were choleraic.

The *Andrea Dorio* left Naples August 16. She arrived at her South American destination with a record of 90 deaths en route. She is now overdue on her return voyage, having been turned back.

The *Remo* left Naples August 17. She has just returned to the quarantine station, after losing 87 with cholera.

The *Vincenzio Florio* left Naples August 17. She arrived at Rio after the loss of 12 lives from cholera, and is now on her way back.

To sum up, then, eight ships left Naples within a month. Three were prepared and escaped infection; five were unprepared and all had cholera.

There is no absolute proof that the precautions taken with the three ships were the cause of their escape, but surely sanitary science has a right to claim that all the probabilities point that way.

In trying to arrive at definite and well-founded opinions as to the merits of the medical inspection at foreign ports, or to formulate suggestions for the amendment of the law and regulations, one is constantly met by the difficulty in separating the purely sanitary view of the question from the much larger question of the regulation and restriction of immigration. The two questions are dependent, and yet entirely distinct. Strictly speaking, the medical inspector has nothing to do with the advantages to be derived from a social standpoint, from the medical inspection of emigrants at their points of embarkation. We have nothing to do with the regulation, restriction, or improvement in character of immigration. Our functions begin and end with the prevention of the introduction of contagious disease.

The first question to be considered is the desirability of making the inspection service a permanent one. I am strongly of the opinion that the facts do not justify such a step.

Unquestionably the inspection as conducted this summer has been of the very greatest utility. There can be no reasonable doubt that cholera would have invaded the United States but for the rigid inspection instituted at the ports of embarkation. But in the normal state of affairs there may be five years together when there is no danger of cholera. The only other disease that is particularly to be dreaded among the emigrants of to-day is smallpox, but the general prevalence of vaccination and the comparative ease with which the disease can be confined when it does appear reduces the danger so much that it is certainly not worth while to keep up an elaborate system of inspection solely on its account.

If the law were amended so as to give the medical officer authority to reject for other than infectious and contagious diseases a great deal more might be done, but it is a question even then if the work can not be done more thoroughly at the ports of arrival, as part of a settled and rigid system of inspection, both medical and lay. There seems to be something more than a probability that there will be cholera in Europe next summer; and, therefore, I believe that the present system should be continued until the danger is past. As soon as that time comes, probably by next fall, I think the inspectors should be withdrawn. After that it might be well to keep two men abroad with authority to visit the different ports and keep posted as to their sanitary conditions, but even this is doubtful.

When there is no cholera to be found there is really nothing for an inspector, acting under the present law, to do. He can take measures toward improving ventilation and other sanitary conditions on board ship, it is true; but a properly conducted inspection system at the port of arrival would be much more effective, for then fines could be assessed and collected. He can clear the ships in good order; but if the captains are not good ones he can not insure their being kept clean. In brief, my opinion is this: Put the drafting of a new passenger act into the hands of a competent board and assign the duty of seeing that its provisions are properly enforced to medical officers at the various ports in connection with the maintenance of all quarantine systems and the medical inspection of arriving emigrants.

Our relation to the consuls at our respective ports should be considered. I desire to preface my remarks on this point by the statement that my own relations with Mr. Twells, Colonel Wood, and Mr. Seymour, the consuls at Naples, Castelmare and Palermo respectively, have been of the most cordial and satisfactory character.



Although the strict enforcement of regulations absolutely wiped out the principal revenues of these gentlemen's offices, there has never been a question raised as to my entire control of all sanitary affairs, nor any friction, personal or official. Mr. Seymour voiced the sentiment of these gentlemen in writing, "What we both want to do is to keep cholera from getting into our common country; under such circumstances there can be no disputing about questions of official precedence." I have also been in more or less constant correspondence with the consuls at Trieste, Malta, and Leghorn, and am under obligations to them all for information and assistance.

In spite of my own pleasant experience I am strongly of the opinion that it is asking too much of consuls to expect that they will welcome into their offices the representatives of a different department, whose presence may very much reduce their own importance and revenues. In many instances we seem to play the rôle of the doctor at Sancho Panza's famous banquet. A shipper enters with a bundle of papers and the consul with visions of fees makes him welcome. Suddenly the medical inspector stretches out his wand and says "Unclean," and straightway the shipper, fees, and, probably, the consul's good humor vanish together.

Over and above the question of fees is the question of precedence and of conflicting duties. Our usefulness would be utterly destroyed if we had to report to the consuls and submit to their direction. The absurdity of putting specialists in sanitary affairs under the direction of consuls with no training in such matters is too manifest to need argument for its proof. On the other hand, it seems that we would be at great disadvantage in many ways, especially so as long as we have to look after cargo, if we were not located at the consulates.

Probably the best plan is for it to be made perfectly plain to the consuls, by instructions from the State Department, that the medical officer shall have absolute control of all sanitary matters, and that his action is subject to review only by his own official superior; and then amend the regulations so as to relieve us of the necessity of looking after cargo, except rags and such food stuffs as are consumed uncooked. I do not believe that many of the present restrictions on cargo are sanitary necessities, and the doing away with them would remove one of the principal causes of friction. Certainly with our present vague and indefinite status it is not to be wondered at if there are conflicts of authority, and if the law and regulations remain unchanged we would be better off with separate offices, that is, if the inspection service abroad is continued at all, a course, which I again venture to maintain, is not to be desired—

1. Because we are virtually trying to control a huge river by checking its innumerable sources, instead of concentrating our energy on its narrowest point—a most unphilosophical and expensive method.

2. Because, unless each medical inspector has at his command a number of assistants, medical and lay, sufficient to enable him to see personally that his orders are carried out, he can never be sure that isolation is maintained or disinfection properly done. And when there are a thousand people to be controlled against their wills, and the employees of the steamship companies have to be largely depended upon for the work, there are innumerable opportunities for evasion.

Here I was fortunate enough to secure three capable and energetic Americans, whom I could trust, to take charge of the work, thus making, with Dr. Cerio and myself, a force of five. Yet we had to work for twelve or fourteen hours at a stretch, doing the fatiguing work of handling, searching, and labeling hundreds of pieces of baggage, standing guard by day and by night to see that isolation was maintained, or looking after a thousand important details. But this sort of work can not be kept up forever. I doubt if any of us could have stood the strain for many weeks longer, and to provide sufficient force at all the ports to do the work carefully and thoroughly would entail great expense, more than sufficient to main-

tain at the proper American ports an adequate system of inspection and quarantine station.

3. Because the attempt to maintain a permanent service on the present lines will certainly lead to international friction.

To sum up, I believe that when cholera is present in Europe the present system is of the greatest value, especially if combined with a thoroughly organized and coherent quarantine system at American ports. At other times it is useless.

I have already expressed the opinion that in any event the cargo restrictions should be greatly modified, or at any rate much wider latitude given to the judgment of inspectors.

With the exception of rags and food stuffs, I am not aware that there is any evidence of the transmission of cholera by means of merchandise. In the presence of a great epidemic it is possible that such a thing might happen, but when there are twenty-five or thirty cases of cholera in a city of half a million population it seems hardly necessary to place restrictions on many of the articles mentioned in the regulations.

The conditions are manifestly different at different ports. No one unfamiliar with the places of origin, character, habits, and route of travel of the steerage passengers going via any particular port is competent to express an opinion of the methods to be employed there.

At Naples the homogeneity of the people, their habitual good health, facility of arrival from their homes, and general good condition simplify the problem very much in some respects. On the other hand, their being all Italians complicates the relations of their Government toward our inspection and renders the isolation and management of them more difficult.

The first essential for thorough work here is that the medical officer should be formally given charge of all southern Italy and Sicily and have considerable latitude allowed him in the enforcement of the regulations. This necessitates the placing of great responsibility on his shoulders, but Naples is no place for a man not ready to back his judgment.

The officer here should have at least one medical assistant, as at present, and also authority to employ such inspectors as he needs and a clerk.

I have at present charge of the work at three consulates and four consular agencies, and also several cargo ports where there are no agencies, but have to a certain extent acquired much of the jurisdiction, more by the force of circumstances and by implication than by direct orders. Without control of this wide territory the hands of the man at Naples would be partially tied, and he should have explicit assignment to its charge and sufficient assistance to handle it properly.

There would seem to be no reason for demanding the detention and isolation of passengers during the winter, but a systematic plan of detention should begin early in the spring.

There are probably a hundred towns in southern Italy that are infected, some very badly, and there are likely a very large number of villages in the same condition. Such being the case, it is hardly possible that there will not be an outbreak of cholera next summer.

If the work is to be done here at all it should be done thoroughly, and all the companies notified that isolation and detention will begin May 1. In the meantime the companies should be compelled to provide suitable facilities for the inspection of passengers and the inspection and disinfection of their baggage; not makeshift accommodations, but well-designed and scientifically arranged ones.

I desire in conclusion to especially express my indebtedness to the consul, Mr. J. S. Twells, for the assistance he has rendered me in the fulfillment of my duty.

Very respectfully,

G. B. YOUNG,  
*Assistant Surgeon Marine-Hospital Service.*

REPORT OF ASSISTANT SURG. WILLIAM G. STIMPSON, DETAILED FOR DUTY AT  
GLASGOW, SCOTLAND.

CONSULATE OF THE UNITED STATES OF AMERICA,  
*Glasgow, Scotland, August 1, 1893.*

*To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:*

SIR: I have the honor to make the following report upon the transactions at this station from July 10, the date of my arrival in Glasgow, to July 31, in compliance with your circular letter to medical officers serving at foreign ports dated July 6, 1893.

#### 1. GENERAL ACCOUNT OF SERVICES.

Before making any changes in the routine work of the station I thought it best to become familiar with the character of the emigrants that sailed from this port and with the methods already in use in enforcing the quarantine laws and regulations of the United States. With this end in view I went to the wharf from which the next vessel sailed, the steamship *Anchoria*, of the Anchor Line, for New York, about two hours before the ship's departure. I inspected the foreign emigrants before they went on board and found them all well. They were a hard-looking class of people, a great many Russians and Poles being among them. They were not clean, and their clothes were old and dirty. The emigrants brought beds made of straw and seaweed with them from Europe. From inquiries I have since made I find that these beds are purchased by the emigrant as he leaves the continental port. During the cholera epidemic of last year they were not allowed to bring them into England, and the vessel on which the emigrants came either took the beds back or threw them overboard. The Scotch emigrants, if they wish to, can buy their beds from stores near the wharf at a cost of 18 cents each. The baggage consisted of trunks, boxes, baskets, bags, and bundles of all shapes and sizes. The baggage and beds I found had been disinfected by sulphur and the yellow labels attached. The physician of the board of trade of the city of Glasgow and myself then inspected the crew. The crew was mustered, an officer called off the names from the crew list, and each man answered to his own name. One man was drunk, but the rest were strong and healthy. After inspecting the crew we went over the steerage compartments of the ship. The compartments were clean and well ventilated, but the woodwork needed painting badly, so that everything had a dull and worn appearance. Each compartment had a cabin in one corner set aside as a hospital, in which were clean beds. The ship also had two hospitals on deck, one on each side, for contagious diseases, which were fitted up with clean beds, bed chairs, pans, etc. In one of the hospitals I saw a number of bottles and packages, which the surgeon of the ship told me contained disinfectants and were to be used on the voyage. The water-closets were ample, and were kept clean by running water.

The cabin passengers were already on board of the vessel. The other passengers were now allowed to embark while the physician of the board of trade and myself inspected them. The board of trade only recognizes two classes of passengers, the cabin and the steerage, the second cabin or intermediate being classed as steerage. The board requires a medical inspection of all steerage passengers. The second cabin passengers were mostly from the British Isles and were all healthy. The emigrants came next, most of them bringing their hand baggage with them. It was an easy matter to tell a Scotch emigrant from one from the Continent. The clear complexion, the rough but clean clothes of the Scotchman making him readily distinguishable.

The next day, July 14, I visited the Allan Line steamer *Peruvian* just previous to her departure for New York, and inspected the emigrants. They were of the



same class as those that had sailed the day before by the Anchor Line. Their baggage had been disinfected by sulphur. The *Peruvian* is known as a cattle ship, as she brings back cattle from the United States. She was clean and well ventilated. The woodwork of the steerage compartments had been recently painted. The steerage passengers occupied the same compartments in which the cattle were brought over from America.

On July 17 the consul and myself called upon the agents of the two lines of steamships carrying emigrants to the United States and informed them that after that date the baggage of all continental emigrants would have to be disinfected by steam, and the consul, upon returning to his office, sent a letter to each line stating this fact. The following is a copy of the letter:

“CONSULATE OF THE UNITED STATES OF AMERICA,  
“*Glasgow, Scotland, July 17, 1893.*

“GENTLEMEN: I have the honor to inform you that in order to carry out the present laws and quarantine regulations of the United States it will be necessary hereafter to disinfect the baggage of all continental emigrants by steam, unless the baggage has already been disinfected under the supervision of the consul or medical officer of the U. S. Marine-Hospital Service at the port of departure from Europe.

“Very respectfully,

“ALLEN B. MORSE, U. S. Consul.”

July 17 being at the beginning of what is known here as “Fair week,” when every one takes a holiday and very little work is done, there was only one vessel carrying emigrants, the *Norwegian*, of the Allan Line, leaving during this week for the United States, so it was agreed that the baggage of the continental emigrants on this steamer should be disinfected by sulphur as hitherto, but that after that date all such baggage should be disinfected by steam.

July 19 I visited the emigrant houses in company with an inspector of the sanitary department of the city. There were very few emigrants in them at the time. The Anchor Line has one immigrant house in use at the present time, and the Allan Line has two. These houses were clean and kept in good order. The floors were well scrubbed and all the windows had blinds. The houses are under the supervision of the sanitary department of the city, and a sanitary inspector visits them at least once a day. His business is to report any case of sickness of a contagious character, to see that everything is kept clean, and that the emigrants are not crowded, 400 cubic feet of air space being allowed to each person. The beds were old and soiled, but the bed linen was clean. There were one or two water-closets on the inside of the houses, but on the outside there were only privies containing tubs, which are emptied at regular intervals by workmen of the sanitary department. One of the houses of the Allan Line had a large dining hall in which the emigrants were allowed to congregate during the day in order that their rooms might be kept in better condition. There is plenty of water on all the floors of these houses, so there is no excuse for the emigrants not keeping themselves clean. The matrons told me, however, that it was impossible to make the emigrants wash themselves, but it seems to me a little supervision on the part of the companies here would remedy this. While visiting the New York quarantine just previous to my sailing for this port, I boarded a German vessel in company with the health officer. The vessel had a large number of immigrants and they were as clean as if they had just come out of the bath. The captain took a great interest in his passengers and he informed me he had made each immigrant wash at least once a day, and that he had had the hair of all of them cut. This might be done at the emigrant houses here if someone in authority had charge of the matter. I have no supervision over these houses although I visit them whenever

I see fit. I have recommended that emigrants be required to wash themselves, but this suggestion has not been carried out. On July 20, the physician of the board of trade and myself visited the steamship *Norwegian*, which was to sail the next day for New York and inspected the provisions. This inspection is very thoroughly done by the physician of the board of trade as the law requires him to certify that a certain quantity of good provisions are on board. He has a list on which he checks off the exact amount of each article, and if anything is bad he requires it to be replaced by that which is good.

## 2. SANITARY CONDITION OF GLASGOW.

The city of Glasgow is situated upon the river Clyde, about 14 miles above the Firth. The total population of the city and closely contiguous suburbs, according to the census of 1891 was 780,414. The present officially estimated population is 788,000. There are, however, many large towns within a radius of 40 miles, so this does not give an idea of the immense number of people living in the neighborhood of the city. The affairs of the city are controlled by a board of police commissioners, of which the lord provost is the president. The sanitary department is under the management of the board of police commissioners, and its officers are appointed by this board. The corps consists of a medical officer of health, an assistant medical officer of health, a chief sanitary inspector, 5 district inspectors, 16 nuisance inspectors, 9 epidemic inspectors, and 5 female inspectors. This department has entire control of all matters relating to the health of the city. Its inspectors are required to visit all the houses, particularly of the poorer classes, and see that they are kept clean, that they are not crowded, and that the plumbing is in good condition. If the inspector finds anything out of order he orders it to be fixed, and if it is not fixed, he has power to summon the tenant before a magistrate. If any persons are found too old or feeble to take care of themselves they are sent to the poorhouse, the sick, if not able to employ a physician, are sent to the infirmary, and all cases of contagious disease to the Belvidere Hospital. The infectious disease (notification) act, 1887, also requires the householder and the attending physician to notify the sanitary department of the city as shown by the following extract:

"Where an inmate of any building used for human habitation within a district to which this act extends is suffering from an infectious disease to which this act applies, then, unless such building is a hospital in which persons suffering from an infectious disease are received, the following provisions shall have effect, that is to say:

"(a) The head of the family to which such inmate (in this act referred to as the patient) belongs, and in this default the nearest relatives of the patient present in the building or being in attendance on the patient, and in default of such relatives, every person in charge of or in attendance on the patient, and in default of any such person the occupier of the building, shall, as soon as he becomes aware that the patient is suffering from an infectious disease, to which this act applies, send notice thereof to the medical officer of health of the district.

"(b) Every medical practitioner attending on or called in to visit the patient shall forthwith, on becoming aware that the patient is suffering from an infectious disease to which this act applies, send to the medical officer of health for the district a certificate stating the name of the patient, the situation of the building, and the infectious disease from which, in the opinion of such medical practitioner, the patient is suffering.

"Every person required by this section to give a notice or certificate who fails to give the same shall be liable on summary conviction in manner provided by the summary jurisdiction acts to a fine not exceeding 40 shillings.

"In this act the expression 'infectious disease, to which this act applies,' means

any of the following diseases, namely, smallpox, cholera, diphtheria, membranous croup, erysipelas, the disease known as scarlatina or scarlet fever, and the fevers known by any of the following names, typhus, typhoid, enteric, relapsing, continued, or puerperal, and includes as respects any particular district any infectious disease to which this act has been applied by the local authority of the district in manner provided by this act."

After the patient has been removed to the fever hospital, the room is fumigated with sulphur and whitewashed. The persons living in the same house or those who may have been infected are removed to a reception house near the hospital, and their clothing, etc., disinfected by steam.

The Belvidere or fever hospital is built on the pavilion system, as seen by the accompanying plan. There is room for 390 beds on the scale of 2,000 cubic feet for adults. In connection with the hospital there is a Lyons disinfector, a cremator, steam carpet machine, and a washing house, in which 1,000 articles per day are treated in one way or another. The smallpox hospital, although situated on the same grounds, has no connection with the fever hospital. It accommodates 150 beds. Persons suspected of being infected with smallpox are detained in a reception house for seventeen days. This house contains 24 beds.

The sewage of the city empties into the River Clyde, making its water dark and offensive. The odor is perceptible some distance from the banks, and is so disagreeable that it is very unpleasant to ride on the different ferries which cross from one side to the other. Numerous plans have been devised by engineers to prevent the Clyde from being contaminated with sewage, but all of them have involved such an enormous outlay of money that none have as yet been considered feasible. The underground railroad, however, which is being constructed under the city, has partly solved this problem. In order to dig the different tunnels it has been necessary to cut through and turn the course of some of the sewers. The sewage thus turned aside has been conducted to a place called Dalmarnock, a few miles outside the city, where precipitation works are now being erected.

The houses in Glasgow are nearly all alike. Before a house can be built a permit has to be obtained from the board of police commissioners, and the house has to be constructed in accordance with certain rules laid down by that board. Some twenty years ago the older and squalid portion of the town was torn down and rebuilt, so that now all the buildings, even in the poorer parts of the city, are large and commodious, with plenty of air space about them. A number of model lodging houses have been built for men and women. I visited one of these houses used by men and found a large smoking room, a dining room, and kitchen, and in the upper stories rows of sleeping bunks. There are facilities for bathing and washing clothes, and everything was scrupulously clean. There is a store in connection with the building in which provisions are sold at cheap rates, and the man is furnished cooking utensils and allowed to cook whatever he wishes. All these facilities are afforded to a poor man for 6 or 8 cents a day.

The city of Glasgow is supplied with water from Loch Katrine, 40 miles distant. This is one of the purest waters in the world, and every precaution is taken to prevent it from becoming contaminated with any animal refuse. The present waterworks were opened October, 1859, but before this the city obtained its water supply from the Clyde. Nothing can better illustrate the necessity for pure water in a city than the following table, taken from Dr. J. B. Russell's paper on the Sanitary Condition of Glasgow in the Transactions of the Seventh International Congress of Hygiene and Demography, Vol. XII, showing the death rate from cholera during the last sixty years:

|               | Deaths. |
|---------------|---------|
| 1832-----     | 3, 166  |
| 1848-'49----- | 3, 923  |
| 1853-'54----- | 3, 885  |
| 1866-----     | 53      |



Cholera has not gained a foothold in this city since 1854. The city was visited by cholera in 1866, and 53 persons died. The fearful mortality of over 3,000 was, however, not reached during this visitation, and this was undoubtedly due to the fact that the people had stopped using the polluted water of the Clyde.

Two cases of cholera occurred in 1892 among Russian emigrants passing through the city en route for the United States. The following history of these two cases has been kindly given to me by Dr. A. K. Chalmers, assistant medical officer of health, taken from his report dated September 5, 1892:

"On the afternoon of Thursday, August 25, a party of emigrants (33 in number) arrived in Glasgow, having landed at Leith, per steamship *Wiemar*, from Hamburg, on the same day. They were boarded in the Atlantic Hotel, York street, where they were immediately inspected by Dr. Hardie, who is retained by the shipping companies engaged in the Atlantic emigrant business for the purpose. All seemed to be well, but late in the following day (26th) two of the number were seized with vomiting and diarrhea—one a male adult, three days and twelve hours after leaving Hamburg; the other a woman, three days and seventeen hours. They were not related. Dr. Hardie was summoned on each occasion, and at once communicated with Belvidere, whither they were removed early on the morning of the 27th. From inquiries made by Dr. Allan at the hospital there is some doubt thrown upon the freedom from diarrheal illness in the case of the woman who landed at Leith. This merely emphasizes the importance of the orders which have subsequently been issued by the board of supervision, empowering the inspecting medical officer to detain passengers from suspected localities, even in the absence of obvious or acknowledged illness. Close observation alone will in such persons enable one to be certain that no diarrhea exists.

There were 31 emigrants remaining. These were shifted from the flat in which the sickness had occurred, and an epidemic inspector and the interpreter were instructed to observe and control their movements. On the 28th, however, it was thought best to transfer them to the Southern Reception House, along with four female servants belonging to the hotel, who had been in various ways exposed to infection from the sick. There they were medically inspected every six hours, and means were taken to make sure that no diarrheal symptoms whatever could elude detection. The interpreter resided in the Reception House as a necessary means of communication. All articles of bedding and clothing which had been exposed to gross soiling and infection were burned, and other articles were disinfected in the usual way.

"A bacteriological examination was made and the cholera bacillus found. The emigrants recovered and were ultimately shipped to the United States."

There were 32 deaths from smallpox in the city during the past winter. The last death occurred June 7. The disease has now almost disappeared, there being only four convalescent cases in the hospital.

### 3. CHARACTER OF VESSELS.

There are two steamship lines engaged in carrying emigrants from this port to the United States—the Anchor Line and the Allan Line. The old State Line has been consolidated with the Allan Line, so that now both lines are under one management. The Anchor Line carries cabin, second-class, and steerage passengers, and sends a vessel once a week to New York. On their best boats, like the *City of Rome* and the *Furnessia*, they carry few, if any, continental emigrants. The steerages of these vessels are clean and well ventilated. The last vessel that sailed was the *Circassia*. Her steerage had been newly painted, so everything was as neat as could be desired. The Allan Line sends a ship once a week to New York and one every fortnight to Boston. Their vessels are all cattle boats, and carry only second-class and steerage passengers. These vessels are clean and well

ventilated. Once every other week a cattle boat of this line leaves this port for Philadelphia. She does not carry any passengers from here, but she stops at Liverpool and takes passengers from there to St. Johns and Halifax. There are only two vessels of the old State Line running at present—the *State of California* and the *State of Nebraska*. They make a trip to New York and return every five weeks. The week that they sail they take the place of the cattle boat. They are fitted up for first-class passengers, as well as for second-class and steerage passengers. Only two vessels belonging to other lines left this city for the United States during the time embraced in this report. The steamship *Prodano*, belonging to Donaldson Bros., sailed without cargo July 19 for Baltimore, and the bark *Gler* sailed in ballast for Savannah, Ga. The average number of vessels each week for the three weeks is  $3\frac{1}{2}$ .

#### CHARACTER, NATIONALITY, AND NUMBER OF EMIGRANTS.

One thousand four hundred and fourteen emigrants left this city for the United States between July 10 and July 31, 1893, of which 564 went by the Anchor Line steamships and 850 by the Allan Line. Mr. John Aitchison kindly furnished me the following table of the steerage passengers on the vessels of the Anchor Line:

| Nationality.       | Anchoria. | Circassia. |
|--------------------|-----------|------------|
| Russians.....      | 149       | 91         |
| British.....       | 147       | 71         |
| Italians.....      | 7         | 15         |
| Hungarians.....    | 14        | 12         |
| Germans.....       | 12        | 9          |
| Austrians.....     | 9         | .....      |
| Scandinavians..... | 4         | 24         |
| Total.....         | 342       | 292        |

I requested the Allan Line to give me the same data, but they replied they kept no record of their steerage passengers, and were therefore unable to tell me their nationality. The proportion of continental emigrants carried by them is, however, much greater than shown in the above table. Most of these foreigners are Jews. They are a dark, swarthy race, with long, black, unkempt hair. The clothes they have on are invariably old and dirty, and the people themselves are never clean, not even their hands and faces. Many of these Jews will not eat food prepared by Christians. If they can not get their own food on the ship they will starve themselves, or eat so little as to make themselves liable to infection from the germs of any disease with which they may come in contact. They bring unleavened bread with them, mixed up with their clothes in their baggage. When the baggage was disinfected all the food found amongst the clothing was destroyed. The Allan Line in one of their houses has a special kitchen for the Jews, and a Christian is not even allowed to enter the room. When I was inspecting the house the boarding-house keeper permitted me to go in as a special favor.

The British emigrants are desirable people to have in the United States. They are as a rule clean and healthy, and should make good citizens. Most of them go as second-cabin passengers to avoid the trouble of passing through the immigration office in New York, and also to keep from mixing with the continental emigrants on the steamer.

#### DISINFECTION OF BAGGAGE.

A copy of the letter sent by the U. S. consul to the steamship companies in regard to the disinfection of baggage by steam has already been inserted in the beginning of this report. The first vessel to come under this order was the steamship *Circassia*. The following letter shows what difficulties were encountered in disinfecting the baggage of these emigrants by steam.

“UNITED STATES CONSULATE,

“Glasgow, Scotland, July 29, 1893.

“To the Supervising Surgeon-General, United States Marine-Hospital Service,  
Washington, D. C.:

“SIR: I have the honor to transmit herewith the following report upon the disinfection of baggage and other matters connected with the embarkation of emigrants at this port for the United States during the week ending July 29, 1893:

“The steamship *Scandinavian*, of the Allan Line, sailed for Boston July 26. She had 79 steerage passengers, only 15 of whom were from the Continent. These 15 were Scandinavians, and as they had not been in Gothenburg I did not require their baggage to be disinfected.

“The next vessel to sail was the steamship *Circassia*, of the Anchor Line. She left for New York July 27, with 222 steerage passengers. The baggage of the continental emigrants on this steamer was disinfected by steam in the hold of one of the ‘tenders’ of the company. The company had applied to the sanitary department of the city for the use of the steam disinfector of the Belvidere Hospital, but the department had declined to allow them to use it. The clothing was taken out of the boxes, trunks, satchels, etc., and spread upon lines stretched across the vessel’s compartment. I required all baggage to be unpacked and disinfected, as I found that it would be very difficult to draw the line between heavy baggage and hand baggage, as the containers were all shapes and sizes. I am of the opinion that the hand baggage should be treated the same as the other baggage, as the continental emigrants from this port are mostly Russians and Polish Jews, and only a few Scandinavians and Germans. Frequently the clothes in the satchels will be very dirty, and mixed up indiscriminately with bread and other eatables. In all cases where bread, etc., was thus found I had it thrown out. The containers and all things not disinfected by steam were treated with a solution of bichloride of mercury 1-800. I informed the interpreter that leather and rubber goods and furs would be injured by steam, and told him to tell the emigrants not to place such articles upon the lines. Whenever I saw anything that would be destroyed by steam I had the emigrant replace it in his trunk, where it was afterwards washed in the bichloride solution. A couple of leather jackets, however, were accidentally left in the compartment, and were of course permanently injured. When everything was ready, steam was turned into the compartment and the temperature raised to 216° F., and that temperature was maintained for half an hour. There was no way for telling the pressure of the steam, but it was estimated to be about 16 pounds to the square inch. Upon opening the compartment it was found that a number of the colored patterns on some of the fabrics had “run,” and the coloring matter had stained the white goods. There was also a number of rust spots on the clothing from the water dripping from the roof. These spots and stains can be removed by proper treatment, so nothing was permanently injured except the leather jackets mentioned above. I assumed none of the responsibility for any damage that might be done by this disinfection, but simply acted as inspector to see if it was performed in accordance with the regulations of the Secretary of the Treasury. \* \* \* The next morning the agent of the Anchor Line ascertained that there was a steam chamber in connection with the Great Western Laundry of this city. Arrangements were made and the baggage that arrived that morning was disinfected in that chamber. I visited the laundry and the steaming was done under my inspection. This steam chamber is efficient, as the engineer is able to get almost any temperature and pressure that is desired, the only objection to it being that the whole of the apparatus is in one room.

“The next vessel to sail was the Allan Line steamship *State of California*, which left for New York July 28 with 295 steerage passengers. The day before the agents



of the Allan Line tried to induce me to give this vessel a bill of health without requiring the steam disinfection of the baggage of the continental steerage passengers. I told them that it would be impossible for me to do this. They then asked me to send them a letter stating this fact, which I did. I inclose a copy of the letter I sent them. The disinfection was done that evening under my inspection in the steam disinfector of the sanitary department of the district of Govan, Glasgow, and was very satisfactory. The family, with the two children convalescent from smallpox, of which I wrote you last week, were allowed to embark upon this vessel, as they had so far recovered that I did not consider them a source of infection to the ship. The children were washed in a weak solution of bichloride of mercury, and their clothes were boiled. The family did not have any baggage, not even a hand satchel. The certificate from Germany was sent along with them. \* \* \*

“Very respectfully,

“WM. G. STIMPSON,

“Assistant Surgeon, Marine-Hospital Service.

[“NOTE.—I have subsequently ascertained that the agents of the Anchor Line made a second application for the use of the disinfector of the Belvidere Hospital, and the sanitary department of the city finally consented to allow them to use it on this occasion. The company preferred, however, for some reason of their own, to use their own ‘tender’ after all. If I had known at the time that they had obtained permission to use this steam disinfector, I would have strongly advised, if not insisted, upon their doing so, as the disinfection in such a chamber is much more thoroughly and satisfactorily performed.”]

“UNITED STATES CONSULATE,

“Glasgow, Scotland, July 27, 1893.

“GENTLEMEN: I have the honor to state that I shall have to insist upon the disinfection by steam of the baggage of the continental emigrants which take passage for New York on the steamship *State of California* to-morrow. If there are any continental emigrants on the steamer whose baggage has not been disinfected by steam I shall be forced to refuse to give the vessel a bill of health.

“Yours, respectfully,

“WM. G. STIMPSON,

“Assistant Surgeon Marine-Hospital Service.

“MESSRS. JAMES & ALEXANDER ALLAN, Glasgow.”

#### CHARACTER OF MERCHANDISE.

The cargoes of the vessels that left this port for the United States during the month of July consisted of general merchandise from the British Isles. The character of the goods is shown by the following list: Dry goods, carpets, machinery, building stones, tiles, bricks, coal, chemicals, herrings, whale oil, whisky, rum, bibles, books, old ropes, waste paper, fishing tackle, claymores, etc. The waste paper was accompanied by consular certificate stating that it had been collected in Scotland.

#### *Statement of the number of vessels inspected from July 10 to 31.*

##### Destination:

|                    |    |
|--------------------|----|
| New York .....     | 5  |
| Philadelphia ..... | 2  |
| Baltimore .....    | 1  |
| Savannah .....     | 1  |
| Boston .....       | 1  |
| Total .....        | 10 |

## Number of passengers inspected:

|                    |       |
|--------------------|-------|
| First cabin .....  | 169   |
| Second cabin ..... | 370   |
| Steerage .....     | 1,414 |

## Cargo:

|               |   |
|---------------|---|
| General ..... | 8 |
| Ballast ..... | 2 |

Remarks.—Baggage of continental emigrants on 3 vessels were disinfected by sulphur and on 2 vessels by steam. Other vessels carried no continental emigrants.

## CONCLUSION.

The continental emigrants that pass through this city on their way to America come from the lowest classes of Europe and, as I have stated in my letters to the Bureau, are most undesirable people to have in the United States.

Great numbers of Jews are now emigrating to the United States. Some of them do not come direct from the Continent, but stop in this country for a time and then continue their journey to the west, in which case their last residence is given on the emigration sheet as some place in Great Britain. The Scandinavians, British, and Scotch emigrants go mostly to the thinly settled parts of the United States, where they are needed, and they soon become good and useful citizens, but the Jews go to the large cities and towns, which are now overcrowded and in which there are already too many of the poor and unemployed.

If there is no way of preventing the admission of undesirable immigrants into the United States, I should recommend that the medical inspection at this port be made a permanency. I should also recommend that the baggage of the continental emigrants be disinfected by steam, whether suspected of being infected with cholera or not, as there is no telling what diseases these emigrants may bring with them in their clothing; and also that the steamship companies be required to carry out the following provisions:

1. All emigrants must arrive in this city at least two days before the ship's departure, when cholera is suspected the emigrant being detained the usual five days.
2. All emigrants should be given a bath and their body clothing washed, and disinfected if necessary.
3. Steam disinfectors should be erected near the emigrant houses, on the wharf, or at some other convenient place.
4. Emigrant houses should be under the inspection of the medical officer, and the companies be required to carry out all his instructions in regard to cleanliness of the emigrants and of the houses.
5. The emigrant houses should be separated into compartments, so that those arriving on one day can be kept apart from those coming at a later date.

Very respectfully,

WM. G. STIMPSON,  
*Assistant Surgeon, Marine-Hospital Service.*

REPORT OF ASSISTANT SURG. B. W. BROWN, DETAILED FOR DUTY AT GENOA, ITALY.

GENOA, ITALY, August 23, 1893.

To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:

SIR: In compliance with Department letter dated July 6, 1893, directing me to prepare a report of my work at this port from the date of arrival to July 31, I have the honor to submit the following facts pertaining to the enforcement of the quarantine regulations of February 24, 1893, at the port of Genoa:

I arrived in Genoa April 5, 1893, and after consulting with the consul I published the following notice for three days in the leading newspapers:

"NOTICE.—In accordance with the new quarantine law of the United States of America, dated February 15, 1893, all agents of steamers and sailing vessels bound to that country are requested to notify the medical inspector, at the U. S. consulate, before any merchandise or passengers are taken on board."

I also had printed the following circular, which I distributed to the principal shippers:

"CIRCULAR.—Forwarding merchants and exporters sending goods to any part of the United States of America are hereby informed that from this date the new quarantine law is enforced, and that in compliance with the same the following rules must be strictly observed. This consulate must be informed of all vessels about to load for ports in the United States so that the ship may be inspected and disinfected if necessary before taking on cargo. The consulate must also be notified seventy-two hours previous to the date of sailing of any vessel, and the port of destination to which she is bound in the United States given.

"The goods intended to be shipped to the United States are divided into three classes:

"*Class A.*—All new and dry textiles (woolen, cotton, or linen), musical and scientific instruments, new furniture, ales, wines, liquors, live animals, cane and rattan ware, books and printed matter, china, glass, porcelain, precious stones and jewelry, fancy goods, toys, art goods, grains, plants and seeds, india and hard rubber, ivory, leather and leather goods, manure salt and kainit, metal, metal goods and hardware, explosives, Portland cement, salt, silk, tobacco and cigars, and such others as may be added hereto from time to time by the medical inspector of the U. S. Government. This class applies only to absolutely new goods. These goods require neither inspection nor disinfection provided they are properly cased in order to prevent moisture incident to shipment.

"*Class B.*—Sugar of all kinds, coffee, bristles, feathers if new, horse and other animal hair, unmanufactured wool, dextrin, dried fruits and vegetables, eggs and albumen, fresh fruits, mossrags, jute, gunny, raw hides and skins, rennets, guts and bladders, wood pulp and cellulose. All second-hand goods without exception and all others not included in Class A or Class C.

"These goods are always subject to inspection or disinfection, and they must be listed three or four days prior to sailing, in order that no delay may be caused to the shipper or to the vessel.

"*Class C.*—Second-hand goods, such as upholstered furniture, feather beds, down quilts, clothing, except such as may be personal wearing apparel accompanying owner. These articles are entirely forbidden entry into the United States during the time of infectious or contagious disease existing in Europe. The disinfection when required will be done in a manner not to injure the articles, and the certificate of disinfection must be authenticated by the U. S. consul.

"JAMES FLETCHER, *U. S. Consul.*

"B. W. BROWN,

"*Assistant Surgeon, M. H. S., Medical Inspector.*

"GENOA, April, 1893."

The above circular is a copy of the one issued by Passed Assistant Surg. White, at Hamburg.

#### DESCRIPTION OF GENOA.

The population of Genoa for 1892 was 211,943, with a death rate of 2.55 per 1,000. There are three separate sources of water supply, obtained from mountain streams 15 miles from the city, along the banks of which are many small villages. Two of the aqueducts are of iron and the other of brick, and all three are covered. The water is analyzed twice per month. The sewer system consists of large brick



conduits into which both sewage and storm water enter. Most of the manholes are furnished with automatic valves to prevent exhalations. The main sewer empties into the sea outside of the harbor, but the smaller ones near the city front. The water-closet is a relic of the Dark Ages; flush pipe connected directly with principal water pipe. There are seven hospitals and one medical school. The San Andrea Apostolo is said to be one of the finest hospitals in Europe. Health matters are controlled by the municipal sanitary officer, and as far as I have observed he does his work well. The streets are washed every night and sewers flushed. When possible, cases of contagious disease are removed to the lazaretto, and rooms disinfected with bichloride of mercury, carbolic acid, and sulphur, clothing and bedding steamed or burned. All vessels from suspicious ports are detained twenty-four hours and disinfected, and dirty baggage steamed. For this purpose the city has a small steamer, provided with two disinfecting boilers. I was informed by the health officer that three lazarettos and three observation houses had been prepared, in case of cholera this summer, and besides this, a large tract of land outside of the city had been secured for an isolation camp. Rigorous disinfection and isolation will be enforced in case of an outbreak. The last cholera epidemics occurred in 1884 and 1886. In 1884 the infection was thought to have been due to contamination of the aqueduct from the Scrivia River, as there were cases of cholera in the villages along its banks. After this supply of water was shut off from the city the epidemic immediately ceased.

The epidemic of 1886 was probably due to the importation of personal effects. From an examination of health reports for the past year, it appears that Genoa is never entirely free from smallpox, a few cases being recorded nearly every month. There is also more or less typhoid fever throughout the year.

#### DESCRIPTION OF VESSELS.

The only line handling emigrants at this port is the North German Lloyd Steamship Company, which usually runs two steamers per month. Most of the cotton waste and jute, mentioned under merchandise, are shipped in sailing vessels. There are also a number of tramp steamers leaving for the United States, but they generally go in ballast; for this purpose I require them to take solid rock or water; formerly they were in the habit of taking the town rubbish for ballast. My method of dealing with the ships is to require agents to report to me when cargo has been removed. I then see that the vessel is clean, and examine log book as to health during previous voyage. I inspect the vessel again the day of sailing, at which inspection I see all of the crew and have those vaccinated who can not show a satisfactory scar. So far it has not been necessary for me to disinfect any vessels. All captains and agents are impressed with the necessity of keeping water tanks clean. Thirty-two vessels were examined from April 5 to July 31.

#### EMIGRANTS.

Genoa is one of the chief European shipping ports for South America, and every month about 8,000 to 10,000 emigrants leave for that country. These people arrive two or three days before the vessel sails, and lodge in the common boarding houses or sleep on the streets. There are no special hotels for emigrants, and the authorities, apparently, take no interest in them further than to see that they have the proper passports. The day of sailing they are examined by the police authorities, and all children are vaccinated by the port surgeon. These people come principally from Italy and Sicily.

The emigrants bound for the United States are, for the most part, from northern Italy. There are usually some Austrians and a few Turks. They are much cleaner and more respectable in every way than southern Italians. Those from

noninfected localities arrive in Genoa two or three days before the departure of the steamer, and most of them stop at respectable boarding houses. Their baggage is fumigated by sulphur, according to method described under baggage. On the morning of sailing they collect in the reception room of the passenger depot and pass, one by one, before the chief of police, the surgeon of the port, and the ship's surgeon. After passing through this ordeal they come into my hands. I stand at the gangway and have a view of them from the time they leave the police office, 50 feet away, until they reach the ship. I examine them carefully, and if I pass them the emigrant agent stamps their cards with my seal. All first and second class passengers are also examined as they come on board.

Steerage passengers from infected localities are required to be in Genoa five days before sailing of vessel and are examined by me the day they arrive, and at least two additional examinations are given them before day of sailing.

All baggage is steamed according to method given under baggage. Since April 5 I have examined 4,895 emigrants. The above method of dealing with emigrants was carried out up to July 31. Since then, on account of cholera in various parts of Italy, five days' isolation of emigrants and steam disinfection of all steerage baggage has been required.

#### BAGGAGE.

All baggage belonging to emigrants from noninfected localities is opened, the contents spread on racks, and, together with trunks, exposed to sulphur (4 pounds to 1,000 cubic feet air space) for twelve hours. This method was adopted on account of the prevalence of measles, scarlet fever, and diphtheria in Genoa and other cities of northern Italy. The fumigation is conducted in two air-tight lighters. All bedding is rejected. The baggage of those from infected towns is subjected to live steam at a temperature above 102° C. for half an hour, and then dried. Leather goods are soaked in a 4 per cent solution of carbolic acid, and trunks washed inside and out with the same solution. The steam disinfecting plant used by the North German Lloyd Company consists of an iron boiler 15 by 6 feet, placed on a barge. It is provided with a movable iron rack on which to spread the clothing, and the pipes are so constructed that either live steam or dry heat can be used. The steam is obtained from the steamer alongside by means of an iron pipe.

#### MERCHANDISE.

The merchandise from this port consists of general cargoes of marble, olive oil, wines, lemons, preserved fruits, and fish, sausage, etc.; also large quantities of jute bagging and cotton waste. On my arrival I thoroughly inspected the mills where this cotton waste and jute bound for the United States are cleaned and packed. The material is first cleaned in boiling water, then put into large iron cylinders and subjected to steam under high pressure, after which it is transferred to the drying room and thoroughly dried and packed in clean bagging. Of course the above process guarantees absolute disinfection. The next important cargo is pumice stone, which is quarried in Sicily, shipped in bulk to Genoa, and packed in new bags from the above-mentioned mills.

Large quantities of cheese and macaroni are also shipped from here, and occasionally cargoes of coffee, hides, and gums come to this port for reshipment to the United States. All merchandise requiring disinfection is fumigated with sulphur (4 pounds to 1,000 cubic feet of air space) for twelve hours, or subjected to steam. I require consular certificates to accompany invoices of food products and personal effects. All food products from suspicious localities are rejected.

In conclusion I have the honor to submit the following suggestions in regard to sanitary work in Europe.

Steam disinfection of emigrants' baggage should be kept up at all European ports during the coming winter, for clothing belonging to cholera-stricken relatives will certainly be carried to America. Italian peasants save everything.

This work, to be done thoroughly, must be performed by an American medical officer. Consuls, even if otherwise fitted for the work, are not able to devote the necessary time to it, and foreign medical officers can not be relied upon.

Emigrants should only be shipped from such ports where steamship companies are willing to provide all necessary means for carrying out the quarantine regulations of February 24, 1893.

No emigrant should be allowed to land unless his baggage has been disinfected and stamped by an American medical officer.

All second-class passengers embarking from an infected port should be isolated for five days and their baggage steamed. The danger from this class is almost as great as from the steerage.

There should be an experienced officer centrally located, to whom all European consuls should report, by telegraph, any cases of cholera in their districts. Each port could then be notified at once of dangerous localities. Said officer should also inspect stations frequently, and be ready to give advice on the many difficult questions which are constantly arising.

I am glad to be able to report that I have had no trouble with consuls, Italian authorities, or steamship agents; and I wish to take this opportunity to thank Mr. Fletcher, U. S. consul at Genoa, for his valuable assistance in my work.

Very respectfully,

B. W. BROWN,  
*Assistant Surgeon, Marine-Hospital Service.*

REPORT OF ASSISTANT SURG. E. R. HOUGHTON, DETAILED FOR DUTY AT HAVRE, FRANCE.

*To the Surgeon-General U. S. Marine-Hospital Service, Washington, D. C.:*

SIR: In accordance with instructions, I have the honor to transmit the following report of transactions from April 1 to July 31, 1893:

On reaching Havre, the morning of April 1, 1893, I at once called on Mr. Oscar F. Williams, then consul of the United States, and presented my orders. He received me very kindly, but stated at once that he was very much embarrassed by lack of orders from the State Department. He informed me that his letter simply mentioned the fact that a Marine-Hospital officer had been detailed for duty in the consulate in connection with the law of February 15, 1893, and asked him to show such courtesy as he judged necessary. But he had no orders to give me either office room or desk. As the vice-consul's desk was not in use at that time, he politely offered me the use of it, and also any assistance that I might need from him or the clerk. He ordered all books, stationery, and records needed, thereby relieving me of considerable annoyance, but he warned me that his successor had been appointed and might relieve him at any moment.

The first boat inspected according to the new law was the *Rugia*, from Hamburg for New York. I had no bills of health as yet, so after inspection of boat, food, crew, and passengers from Havre, I signed the bill of health given by the consul. This gave rise to the first difficulty—who should sign the bill of health? Consul Williams stated that his instructions as consul were to give a bill of health to all vessels going to the United States, and that those instructions were still in force, there being no repealing clause in the new law. Again, the bill of health sent from the Department of State read, "Consular bill of health," and had a space for both consul and medical officer. Thirdly, to collect the official fee he must sign and seal the bill or else fee could not be legally collected. The result of this was a compromise, and both signed the bills.



Saturday, April 8, at 5 a. m., Mr. Williams and I went to examine the ship, crew, cargo, and passengers of the steamship *La Champagne*, of the Company General Transatlantic. Mr. Williams presented me to the officers of the company and the ship, and also to Dr. Gibert, then director of health. The ship was found remarkably clean, the crew were well, the cargo was new merchandise, well packed, and the passengers were all passed. This examination was a severe ordeal. The officers of the company, the health authorities, and their friends stood off one side in a group and watched me closely. I stood at the foot of the gangway and had the emigrants approach one by one. The head, eyes, throat, cervical glands, and chest of each emigrant were inspected rapidly but thoroughly, and then if passed he was counted by a man stationed at the gang plank. As to first and second class passengers, every possible attempt was made to obtain an accurate count, but it was and has been impossible, owing to the numbers of friends who go aboard to see the voyagers off. Special tickets were used, men were hired, the consul and myself inspected and counted, we made every passenger show his ticket, and then passed his friends with him, but all in vain. Our totals never agreed. The company then tried to help us, but also failed. On the day of sailing passengers and friends come as early as 5 a. m., even when the hour for sailing is noon. Another year I would recommend that steamship companies sell tickets with a medical coupon attached, giving the class and residence for last five days, which coupon could be detached by surgeon and an exact count obtained.

I began my official calls by going to see Dr. Gibert, physician in charge of epidemics and the then director of health.

He was very courteous, and said that he approved of our method of emigrant inspection, but he had protested to his Government against my presence for the following reasons:

That the law of February 15, 1893, had not been sent to the French Government before it took effect;

That the law was against international agreement and courtesy, the United States having no right to make a law taking effect on French soil;

That no permission had been granted to French surgeons to examine ships in United States ports bound for France;

That the medical officer practically superseded the French authorities by giving bills of health after ship and passenger inspection;

And finally, that the medical officer was not properly accredited to the French Government, nor had any request been made that he should be received.

Two plans of action were before me, either to refuse bills of health until the authorities were compelled by commercial interests to allow me to perform my duties, or to come to some amicable arrangement by which my work could be done without giving offense to the officials who felt superseded. I chose the latter course, and a fairly satisfactory plan was adopted. The question of official recognition I did not press, being satisfied at being allowed to do my work unhindered. Recognition I felt sure would come later.

After my visit to Dr. Gibert, Mr. Williams, at my request, wrote official letters to the steamship companies, to the mayor, the chamber of commerce, the sous-préfet, and others in authority, announcing my arrival and my desire to be present at the examination of ships and emigrants leaving Havre for the United States. In addition, a copy of the law was sent to Minister Coolidge at Paris, requesting that he would announce my arrival and request permission for me to assist at all examinations.

Replies were received from all, inviting me to assist, except from the sous-préfet, who represents the French Government at Havre. I again called on Dr. Gibert at his office to ask the reason, and to tell him that unless I was allowed to examine ships, crews, cargoes, and passengers, and issue a bill of health, the ships would

be subject to a fine on reaching the United States. He received me very courteously and asked me to go home and lunch with him as he was too busy to give me any other time. Without any questioning on my part, he told me at once it was understood by all the authorities that the medical officer should go right on with his work until the answer to his protest was received from Paris through the sous-préfet. He considered this new idea of emigrant inspection and quarantine at point of departure to be very wise indeed and could not fail to meet the approval of the steamship companies; said it reduced to a minimum the dangers of infecting the ships and of subsequent quarantine at United States ports. But he still objected vigorously to the manner of putting the law into effect and of sending quarantine officers to France unannounced.

On the 27th of April I called on the mayor of Havre, and later, with Dr. Gibert and Consul Williams, we visited the hospitals, because a rumor had been circulated to the effect that two deaths from Asiatic cholera had occurred, two other cases still being under treatment at the hospital. After our visit, which proved the falsity of the rumor, the mayor gave me permission to visit the hospitals at any time. Dr. Gibert introduced me to the head clerk of the bureau of hygiene and ordered him to allow me to see the records if I desired, and to give me any information concerning epidemics in possession of the bureau whenever I asked for it.

Both Dr. Gibert and Mayor Brindeau asked me to kindly defer sending any cablegrams to Washington concerning suspected cases of cholera at Havre until I had seen and diagnosed the case myself. I could not refuse to give assent to so reasonable a request.

On the 1st of May the sous-préfet called on me and handed me a letter in response to the one addressed to him by Mr. Williams in my behalf, giving the decision of the French Government as to the medical officer's position.

[Translation of letter of the sous-préfet.]

“FRENCH REPUBLIC.

“SOUS-PRÉFECTURE OF HAVRE.

“OFFICE OF THE SOUS-PRÉFET,

*Havre, May 1, 1893.*

“SIR: You wish, in announcing to me by your letter of April 12 the arrival at Havre of Dr. E. R. Houghton, surgeon of the Marine-Hospital Service of the United States, to express in his name the desire to assist at the medical visits held by the doctors of the town, of the port, and of the steamship companies.

“I have the honor to inform you that the administration of France consents to give to the doctor attached to the consulate of the United States the authority to accompany the delegates of the French Sanitary Administration and of the Emigration Service when these visits are made in view of the departure of French or foreign ships from Havre for a port in the United States.

“With distinguished consideration,

“THE SOUS-PRÉFET,

*Lardin de Musset.*

“To the CONSUL OF THE UNITED STATES.”

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After handing me the letter, Mr. de Musset, the sous-préfet, invited me to meet Mr. Hendley, the préfet, at 10 o'clock, May 5, to arrange some minor details.

At the appointed time a meeting was held at the sous-préfecture. The préfet, the sous-préfet, and Dr. Gibert were present. The préfet stated that Dr. Gibert's protest had first called the attention of the French Government to the new law,

and consequently the general objection to the American officer operating on French soil had resulted in another protest, which had reached the ambassador in Washington about the 22d of April.

Pending a decision, the French Government had decided, in the interests of commerce, to grant my request to assist at all inspections of ships, etc., bound for the United States. Since the local sanitary law requires the examination of vessels during an epidemic only, Dr. Gibert's presence at an inspection might give rise to an unfounded suspicion. So Dr. Fauvel was temporarily appointed to assist Mr. Nicolle, commissioner of emigration, and a cordial invitation was given me to be present and to make any suggestion or recommendations that seemed to me necessary.

To assure himself that all was going well, the sous-préfet was present at 5.30 a. m. the following Saturday at the examination of ship, crew, and emigrants. To quote from my letter to the Marine-Hospital Bureau, May 6: "After all were inspected, Mr. Nicolle (commissioner of emigration) and Mr. de Gaalon (principal agent Transatlantic Company) both requested Mr. de Musset to report to his Government that they had visited the ship, crew, and third-class passengers with me, and that they were satisfied that my assistance at the examinations was entirely agreeable and acceptable; that it was of benefit to the steamship company, and that there was no further objection to my presence." Since then the medical officer has met with no opposition and everything has worked harmoniously.

The arrival of the newly appointed consul, about the 1st of May, reopened the questions of jurisdiction and duties. After several frank discussions on the subject the decision was reached that the consul would write to the State Department for a definite statement of his duties and for information as to who should sign bills of health, and whether, having been assigned to duty in the consulate, the medical officer should report to the consul or not. Pending the decision of the State and Treasury Departments the medical officer took charge of sanitary and medical matters, with the understanding that as long as he was in the consulate the consul should be kept informed of his decisions and acts, and in cases of great importance be consulted. Under this temporary arrangement everything progressed smoothly, but as yet (July 31) no definite reply has been received.

The sanitary condition of the port of Havre is good, and has been so since my arrival, owing to the efforts of the bureau of hygiene for the town and those of the director of health for the port itself.

The director of the public health is appointed by the minister of the interior, to whom he makes his reports. He has charge of the port, shipping, bills of health, etc. The methods in force for preventing the entrance of disease by ships are as follows: On entering the port the ship is met by a health officer, and a number of questions asked as to sickness, sanitary condition, etc., and the bill of health is examined. This is called "reconnaissance par questions orales" (recognition by oral questions). Then a blank form is filled out by captain and pilot, which calls for about the same information. This constitutes the "Arraînement par interrogatoire imprimé" (reasoning by printed questions). If the answers are satisfactory the boat is passed. If not, then comes the "visite médicale." The boat enters the basin, but anchors in quarantine ground. The inspection is made by the health doctor for the General Government and by the captain of the health for the town. If there are no sick aboard the officers proceed to what is called "simple désinfection," which is the disinfection of all the linen and clothes of the crew by steam. When, however, sickness of a contagious character is found aboard the patients are taken ashore and put in a reception hospital and everything is disinfected, including the ship. This is called "désinfection générale." After being the required number of days in quarantine the ship is released if no new cases have developed.



When the vessel has no sick aboard, but comes from an infected port, it is tied up to the quarantine dock and put under surveillance. A "garde sanitaire" is put in charge, and it consists of a brigadier, called inspector of salubrity, who is from the city but under orders of the director of health, and a guardian of the peace. No one is allowed to come ashore, except the captain and chief engineer, until the required time is up.

The director of health is allowed unlimited power in a case of emergency. He can order a boat out to sea to anchor, can disinfect in any way he chooses, and for any length of time, but after taking action he must report to the minister of the interior what he has done and the reasons therefor. His power would be unlimited were it not kept in check by the comparatively small amount of money allowed him.

#### CHARACTER OF VESSELS SAILING FROM HAVRE AND THE AVERAGE NUMBER EACH WEEK.

The ships leaving this port for the United States are classified as follows: (1) those engaged in passenger and freight trade; (2) those engaged in freight trade only; (3) petroleum steamers; (4) sailing vessels.

The lines carrying passengers are the Company General Transatlantic, which sends out one boat to New York every Saturday, carrying from 400 to 800 passengers of all classes and a crew of 230, except the *Touraine*, which carries a crew of 300. The Hamburg-American Packet Company advertises sailings from Havre every Tuesday, but they average one boat in two weeks. As a rule, only emigrants and freight are taken from here. From 50 to 200 emigrants are taken in addition to those taken at Hamburg. They also send freighters to New Orleans.

The *Compagnie Commerciale de Transport* sends one boat a month to New Orleans via Antwerp and Bordeaux. Only freight is taken from here.

The freighters have no regular trips, being chartered for a voyage when a cargo is collected.

The petroleum boats bring petroleum to Havre and return to Philadelphia in water ballast.

The sailing vessels have no regular sailings, and are chartered for the voyage only.

The average number of vessels from Havre each week for the period from April 1 to July 31 is about three a week, the majority being freighters and sailing vessels.

The measures necessary to enforce a compliance with the regulations were very simple. The requirements were carefully explained to steamship companies and to shipping brokers, and in most cases these were promptly observed. The British tank steamer *Oriflamme* was the first to disobey. Her captain, through his broker, refused to take a bill of health, saying that he was going to Dartmouth to coal up and he could get his bill there. He was informed of the new law and the penalty attached to an infringement, but he replied that he would save the \$2.50 and go without the bill of health. As soon as it was ascertained that the *Oriflamme* had sailed the Marine Hospital Bureau was notified, and a penalty was imposed according to the law as soon as the ship reached Philadelphia. This action was soon known to all the ship captains and brokers at Havre, and no more trouble has been experienced in that direction.

The captain of the French steamer *Le Havre*, bound for New Orleans from Havre via Antwerp, was the first to object to an inspection, and it was only after being warned that he could get no bill of health that he became reasonable and allowed the inspection. I sent a complaint to his company (*Compagnie Commerciale*), informing them that I should refuse to go aboard any of its steamers until they had instructed their officers to be at least decently civil. The vice-president of the company called the same day and made profuse apologies, and

offered to replace the captain as soon as the boat reached Antwerp. I replied that a lesson in politeness would undoubtedly be sufficient, and, judging from the politeness and courtesy shown me by the captain of *Le Lion* on the occasion of my next visit, I think the lesson was well learned and its influence extended to the other boats of this line.

Some difficulty has been experienced with freight boats and sailing vessels. The crews are discharged as soon as these boats reach port, and are not shipped again until the last hour before sailing. As a result the forecastles are almost invariably in filthy condition, and cleanliness has only been obtained by refusing to give a bill of health until all was cleaned. This task, with a drunken crew brought aboard at the last moment by the police and trying in every way to escape, is sometimes almost impossible; so that now some two or three men are shipped a day sooner to clean, paint, and scrape, so that the boats are fairly clean on departure. Still, the cleanliness does not last long after the crew comes aboard, so some captains have adopted the plan of nailing up the closets and even the forecastle until after the doctor's visit. If it were not for the short time allowed at high tide for ships to leave and enter the port the loss of money consequent upon waiting over a tide, and the almost impossible task, even with police aid, of keeping the crew aboard the boat twelve hours, some better system might be insisted on; but as it is the present imperfect system demands that the ships be clean at doctor's visit anyhow, whatever it may be five minutes after.

The character of the emigrants varied with the different localities from which they came. The Swiss and the French were, as a rule, about the same as the average second-class passenger. They were clean and well dressed, all of them had money, and their trunks were large and well stocked with new garments and linens. The Germans from near the border of France and Switzerland are also a very desirable class, being very strong and healthy, and in possession of money and outfits. Nearly all, if not all, of these four nationalities are able to read and write. The south Germans and Austrians are about on a par, but are not apt to be as well educated as either Swiss or French. The Italians were all in good health, and dirty. In their trunks cheeses and pantaloons, enormous sausages and hobnailed boots were packed in regardless of consequences, so that in opening the trunks for inspection the question was simply one of what not to reject. One Italian, finding his trunk half empty after packing all his effects, filled the other half with dirt, his explanation being that he was taking Italy to America with him. Another man had nothing in his trunk but a hat, a pair of shoes, and an olive tree. The Greeks and Roumanians are about the same as the Italians. The Syrians, Armenians, and Arabs were the poorest and least desirable of all the emigrants who passed through Havre.

The bulk of the emigration is from Italy, Switzerland, France, and Germany, including Alsace-Lorraine. The list is as follows:

|                       |                |                 |
|-----------------------|----------------|-----------------|
| Italy, 2,550.         | Greece, 300.   | Luxembourg, 19. |
| Switzerland, 1,575.   | Turkey, 250.   | Roumania, 17.   |
| Alsace-Lorraine, 775. | Syria, 200.    | England, 14.    |
| France, 750.          | U. S. A., 190. | Spain, 10.      |
| Austria, 575.         | Belgium, 51.   | Russia, 10.     |
| Germany, 475.         | Armenia, 38.   | Sweden, 8.      |
| Total, 7,807.         | Refused, 4.    |                 |

The methods of prevention of the conveyance of infection by emigrants are as follows: Care in sale of tickets; medical examination; baggage inspection. This for emigrants from noninfected districts. From infected localities third-class passengers undergo five days' detention, with daily supervision, all effects and baggage being disinfected.

1. The steamship companies notified their agents not to sell a ticket to anyone who might be refused admittance to the United States because of sickness or deformity; and added that any emigrant refused by the medical officer would be returned to his home at the expense of agent who sold the ticket. This accounts for the very small number rejected.

2. *Medical inspection.*—The emigrants are brought into a large room by twentys, where they are vaccinated and given cards. They then pass, one by one, before the emigration physician and the Marine-Hospital Service surgeon. The examination is the same as that described at the beginning of this report. In spite of its brevity, it gives us a pretty good idea of the emigrant's health. All doubtful cases are put one side and reexamined by all the doctors together. The thoroughness of this method is shown by the fact that not a single case of disease occurred on shipboard among the emigrants, and that not one was refused and returned from New York during the period covered by this report.

3. *Baggage inspection and disinfection.*—This consists of opening all or a great part of the trunks and rejecting foods, old and dirty bed clothing or feather beds, etc., as required by regulations. For the disinfection all effects are taken from the trunks and made into loose parcels and put into numbered sacks of large meshed material. These sacks are hung on racks in the patent steam chamber, and submitted to a heat of 117° C., with 7 pounds pressure. Every ten minutes the steam is turned off and the temperature allowed to fall to 100° C., after which it is again turned on. At the expiration of the required time the door of steam chamber is opened and the clothes are dried by means of the coil of steam pipes. On opening these sacks, after drying, the articles in the middle of sacks are too hot to handle.

4. Detention is almost unnecessary at Havre, as emigrants are not booked from infected districts. When necessary all the emigrants are put aboard a large steamer, which is moored in the quarantine grounds and serves as lazaretto. They are bathed the first day, their clothes being disinfected while they are in the bath. Then they are vaccinated. They are visited daily by the medical officer, who inspects their quarters and their food. Police officers prevent the passengers from coming ashore.

The merchandise shipped from this port belongs almost altogether to Class A, requiring neither inspection nor disinfection, and consisting principally of new merchandises, jewelry, clocks, wines, dress goods, etc. The only disinfection so far has been one consignment of hides, which was thoroughly sprayed with lysol and bichloride solution. Two-thirds of the shipment were accepted, one-third being returned from New York. They were reshipped by another line and were accepted.

*List of principal articles of merchandise from Havre.*

|              |             |                       |                 |
|--------------|-------------|-----------------------|-----------------|
| Coffee,      | Hardware,   | Extracts,             | Blackening,     |
| Grains,      | Clocks      | Chromos,              | Paints,         |
| Champagne,   | Tools,      | Books,                | Wines,          |
| Cheese,      | Trimnings,  | Bric-a-brac,          | Cordials,       |
| Whisky,      | Paper,      | Flowers (artificial), | Hides,          |
| Oils,        | Capsules,   | Bronzes,              | Rugs,           |
| Porcelain,   | Furniture,  | Linens,               | Mineral waters, |
| Food stuffs, | Whalebones, | Ribbons,              | Velvets,        |
| Feathers,    | Embroidery, | Passementerie,        | Rubber,         |
| Hats,        | Pictures,   | Tulles,               | Gloves,         |
| Skins,       | Preserves,  | Fabrics,              | Sponges.        |
| Straws,      | Bonbons,    | Ironwork,             |                 |
| Silks,       | Laces,      | Brushes,              |                 |
| Sardines,    | Perfumes,   | Shoes,                |                 |



Condensed statement, by months, of vessels inspected at Havre.

| Date. | No. | Name of vessel.          | Num-ber crew. | Passengers.  |               | Baggage—     |             | Cargo.                  | Destination.   |
|-------|-----|--------------------------|---------------|--------------|---------------|--------------|-------------|-------------------------|----------------|
|       |     |                          |               | First class. | Second class. | Third class. | In-spected. |                         |                |
| Apr.  | 4   | Rugia                    | 97            |              |               | 84           |             | General new merchandise | New York.      |
|       | 8   | La Champagne             | 229           | 210          |               | 483          |             | do                      | Do.            |
|       | 11  | Wieland                  | 98            | 3            |               | 206          |             | do                      | Do.            |
|       | 15  | La Touraine              | 307           | 298          |               | 401          |             | do                      | Do.            |
|       | 18  | Suevia                   | 89            |              |               | 267          |             | do                      | Do.            |
|       | 22  | La Bretagne              | 224           | 287          |               | 557          |             | do                      | Do.            |
|       | 25  | Flandria                 | 34            |              |               |              |             | do                      | New Orleans.   |
|       | 29  | La Gascogne <sup>1</sup> | 229           | 140          | 71            | 533          |             | do                      | New York.      |
|       | 29  | Kenilworth               | 27            |              |               |              |             | Ballast                 | Do.            |
|       |     | Total                    |               |              |               | 2,531        |             |                         |                |
| May   | 6   | La Champagne             | 228           | 208          |               | 543          |             | General new merchandise | Do.            |
|       | 13  | La Touraine <sup>1</sup> | 312           | 127          | 74            | 354          |             | do                      | Do.            |
|       | 16  | Rugia                    | 97            |              |               | 250          | 270         | All exteriorly          | Do.            |
|       | 20  | La Bretagne              | 230           | 117          | 63            | 475          |             | do                      | Do.            |
|       | 20  | La Havre                 | 42            |              |               |              |             | do                      | New Orleans.   |
|       | 23  | Wieland                  | 98            |              |               | 177          | 350         | do                      | New York.      |
|       | 27  | La Bourgogne             | 233           | 118          | 50            | 418          | 600         | do                      | Do.            |
|       | 29  | Ascania                  | 34            |              |               |              |             | do                      | New Orleans    |
|       |     | Total                    |               |              |               | 2,217        |             | None for United States  |                |
|       |     |                          |               |              |               |              |             |                         |                |
| June  | 2   | Sollingen                | 41            |              |               | 176          | 236         | General new merchandise | New York.      |
|       | 3   | La Champagne             | 227           | 120          | 60            | 273          |             | Coffee and ballast      | Do.            |
|       | 3   | Edith Mary               | 9             |              |               |              |             | Water ballast           | Do.            |
|       | 5   | Le Lion                  | 30            |              |               |              |             | Coffee, etc.            | Philadelphia.  |
|       | 6   | Russia                   |               |              |               | 27           | 32          | Coffee, etc.            | New York.      |
|       | 8   | Marseille                | 43            |              |               |              |             | New merchandise         | New Orleans.   |
|       | 10  | La Touraine              | 307           | 114          | 81            | 379          | 285         | do                      | New York.      |
|       | 13  | Dania                    | 96            |              | 1             |              | 1           | do                      | Do.            |
|       | 15  | Alma                     | 23            |              |               |              |             | Water ballast           | Baltimore.     |
|       | 17  | La Bretagne              | 229           | 144          | 39            | 429          | 254         | General new merchandise | New York.      |
|       | 20  | Cassius                  | 11            |              |               |              |             | None for United States  | New Orleans.   |
|       | 24  | La Bourgogne             | 232           | 130          | 54            | 329          | 429         | General new merchandise | New York.      |
|       | 24  | Sirrah                   | 10            |              |               |              |             | Ballast                 | Savannah.      |
|       | 29  | Markomania               | 23            |              |               |              |             | General                 | New Orleans.   |
|       | 30  | Henny                    | 17            |              |               |              |             | Ballast                 | Brunswick, Ga. |
|       |     | Total                    |               |              |               | 1,613        |             |                         |                |

<sup>1</sup> One passenger detained.

*Condensed statement, by months, of vessels inspected at Havre—Continued.*

| Date.  | No. | Name of vessel.           | Num-<br>ber<br>crew. | Passengers.     |                  |                 | Baggage—        |              | Cargo.                               | Destination.     |
|--------|-----|---------------------------|----------------------|-----------------|------------------|-----------------|-----------------|--------------|--------------------------------------|------------------|
|        |     |                           |                      | First<br>class. | Second<br>class. | Third<br>class. | In-<br>spected. | Disinfected. |                                      |                  |
| July 1 | 63  | La Champagne              | 228                  | 119             | 48               | 313             | 420             |              | General, etc., new mer-<br>chandise. | New York.        |
| 5      | 64  | Bonita                    | 11                   |                 |                  |                 |                 |              | Ballast                              | Wilmington, N.C. |
| 8      | 65  | La Touraine               | 306                  | 100             | 61               | 345             | 457             | 7            | General, etc., new mer-<br>chandise. | New York.        |
| 12     | 66  | Anna                      | 10                   |                 |                  |                 |                 |              | Ballast                              | Wilmington, N.C. |
| 15     | 67  | Deputy de Lome            | 44                   |                 |                  |                 |                 |              | None from Havre                      | New Orleans.     |
| 15     | 68  | La Bretagne               | 229                  | 112             | 57               | 287             | 365             | 3            | General, etc., new mer-<br>chandise. | New York.        |
| 16     | 69  | Wistow Hall               | 60                   |                 |                  |                 |                 |              | Ballast                              | Baltimore.       |
| 18     | 70  | Valeria <sup>1</sup>      |                      |                 |                  |                 |                 |              | Water ballast                        | New Orleans.     |
| 19     | 71  | L'Oriflamme               | 26                   |                 |                  |                 |                 |              | Ballast                              | Philadelphia.    |
| 19     | 72  | Nerito                    | 28                   |                 |                  |                 |                 |              | do                                   | Baltimore.       |
| 19     | 73  | Poseidon                  | 16                   |                 |                  |                 |                 |              | General, etc., new mer-<br>chandise. | Savannah.        |
| 22     | 74  | La Bourgogne <sup>2</sup> | 232                  | 100             | 51               | 205             | 310             |              | Ballast                              | New York.        |
| 24     | 75  | Sappho                    | 10                   |                 |                  |                 |                 |              | General, etc., new mer-<br>chandise. | Wilmington, N.C. |
| 29     | 76  | La Champagne              | 228                  | 96              | 68               | 296             | 411             | 3            | Ballast                              | New York.        |
| 30     | 77  | Cheroskia <sup>1</sup>    |                      |                 |                  |                 |                 |              | Ballast                              | New Orleans.     |
|        |     | Total                     |                      |                 |                  | 1,446           |                 |              |                                      |                  |

<sup>1</sup> Visé only given; no passengers nor cargo from Havre.

<sup>2</sup> Two passengers detained eight days.

As to suggestions, I would respectfully state that in spite of the opposition to and protests made against allowing a foreign officer to do inspection duty on French soil, the results have already, in four months, been such as to compel the recognition of the fact that the practice of inspecting ships and passengers at port of departure is of positive value. The character of the emigrants has improved, the ships, especially classes 2, 3, and 4. are very much cleaner, the food is better, and more attention is paid to ventilation and ship sanitation. Based on these facts and the private statements of several officials here, my only suggestion would be to invite foreign governments to send their quarantine officers to assist at ship inspection at American ports, and a cordial reception would meet any American officer sent to assist in foreign ports.

If foreign service is to be permanent, Passed Assistant Surg. Woodward's suggestions should be considered with a view to adoption, as they are practical and founded on what experience abroad has shown us to be the needs of the service.

Very respectfully, yours,

E. R. HOUGHTON,  
*Assistant Surgeon, Marine-Hospital Service.*

REPORT OF ASSISTANT SURG. M. J. ROSENAU, DETAILED FOR DUTY AT  
ANTWERP, BELGIUM.

TREASURY DEPARTMENT, MARINE-HOSPITAL SERVICE,  
OFFICE OF THE UNITED STATES CONSULATE,  
*Antwerp, Belgium, September 1, 1893.*

*To the Surgeon General U. S. Marine-Hospital Service, Washington, D. C.:*

SIR: In obedience with your letter of July 6, 1893, I have the honor to make the following report of operations at the port of Antwerp, Belgium, from April 4 to July 31, 1893:

On assuming control of the sanitary matters here the following circular letter was addressed to the owners, agents, and ship brokers:

"CIRCULAR—NOTICE TO VESSEL OWNERS AND SHIPPERS.

"UNITED STATES CONSULATE,  
*"Antwerp, April 5, 1893.*

*"To the masters, owners, and agents of vessels at the port of Antwerp, and others whom it may concern:*

"SIR: Your attention is respectfully invited to the law enacted by the U. S. Government February 15, 1893, and which is now in effect at this port.

"Any information concerning the new law and its regulations may be obtained at the U. S. consulate, Rue Everdy, 25.

"In order to facilitate the work prescribed by its regulations, you are requested to report the time of departure of vessels sailing for the United States at the earliest possible moment.

"Vessels prior to taking in cargo for any port in the United States are required to be cleansed in all parts. The disinfection of vessels will only be required when considered necessary by the inspector, and as it is required that vessels be disinfected when empty, you are requested to notify me of that fact so that the inspection may be accomplished before the cargo is taken on board.

"GEO. F. LINCOLN, *U. S. Consul.*

"M. J. ROSENAU,

*"Assistant Surgeon, U. S. Marine-Hospital Service."*

The principal passenger steamship company sent out the following circular to all its agents and subagents, in order to reach as far as possible the sources of the evils:



## BAGGAGE.—IMPORTANT.

[Official circular—Translation.]

“ANTWERP, April, 1893

“In view of the recent quarantine laws enacted by the United States, passengers are notified not to carry baggage that may be regarded as suspicious by the American health authorities. By carrying such baggage they subject themselves to not only delay and the possible loss of passage, but to the injury of their property, without redress or compensation.

“Suspicious articles are: Bedding, including mattresses, blankets, and feather beds; also unwashed bed and personal clothing.

“It is hereby ordered that no bedding be taken as baggage; and furthermore, that no bed or personal clothing, sheets, pillowcases, or cotton or linen articles, be packed until they have been thoroughly washed.

“It is recommended that all effects be packed in trunks or chests secured with locks and easily opened, that damage and breakage in cases of disinfection against cholera may be prevented.

“Passengers are advised that they must have their baggage in Antwerp at least two days before the time fixed for departure if they desire to avoid the risk of being refused passage.”

Some merchants and ship brokers responding with indifference to our requests concerning cargo, the following was addressed to them in order to explain more explicitly the meaning of the new law:

## “CIRCULAR LETTER.

“UNITED STATES CONSULATE,

“Antwerp, April 17, 1893.

“To merchants, ship brokers, agents, and all whom it may concern:

“You are respectfully informed that all goods leaving the port of Antwerp for the United States must be inspected prior to shipping. When required, the district of origin must be authenticated.

“For general information goods are divided into the following three classes:

“Class A.—Articles not subject to disinfection. New and dry merchandise packed to prevent moisture incident to voyage.

“Class B.—Articles subject to disinfection: (1) Personal effects or bedding from infected or suspicious districts; (2) feathers, hair of all kinds, wool, fur on skins, hides and skins themselves, and all similar articles; (3) fish bladders, glue, rennets, sausage casings, and such like; (4) crude sugar, glucose, and coffee; (5) all articles not included in Class A.

“Class C.—Not to be shipped (forbidden): (1) Second-hand upholstery, feather beds, pillows, down quilts; (2) food products from any infected locality; (3) rags, old jute, old gunny, from similar localities.

“It is requested that you notify me at your earliest convenience of goods ready for shipment, in order to avoid unnecessary delays.

“Very respectfully, yours,

“M. J. ROSENAU,

“Assistant Surgeon, Marine-Hospital Service.”

This circular had a good effect, for from that date goods were properly presented in time for the necessary inspection.

Previous to my arrival in Antwerp there was very little control over the emigrant while in the city. It first became necessary to select certain hotels, reserve them exclusively for our emigrants, construct proper facilities on the dock for inspection, and arrange means for bathing and disinfection.

As there were no facilities for steam disinfection in the city it was decided to construct a suitable installation. In the meantime the disinfection was carried on in one of the compartments of the ship, the baggage being unpacked and spread upon the bed frames or upon lines strung up for that purpose.

The whole system of handling the emigrants, performing the inspection, arranging the disinfection, and the bathing, etc., went through a gradual process of evolution. Scarcely a week passed without changes and improvements.

The emigrant hotels were inspected and numerous alterations instituted.

Beds were taken out of overcrowded rooms, cleanliness insisted upon, wooden beds exchanged for iron ones, and feather beds for spring mattresses, water-closets disinfected, nuisances abated, ventilation improved, water in sufficient quantity supplied to every room, and the general sanitary conditions bettered.

When the city was declared infected it was decided that all baggage exposed to the danger of infection must be disinfected. In order to avoid this large amount of disinfection with the then meager facilities, I suggested that the baggage be intercepted at the railroad station and taken unopened from the arriving emigrant to the dock and stored there ready for shipment.

This greatly facilitated the work of inspection and disinfection, for it was on the wharf the day before sailing, and the only problem then was to separate it into two piles, the one from infected and the other from noninfected localities.

The amount of household goods and baggage taken along by some emigrants is a matter of surprise. At my request the Red Star Line has furnished me the following interesting figures, which furnish a graphic representation of the large amount of baggage taken along by each steamer:

| Name of vessel.   | Number of passengers. | Pieces of heavy baggage. | Estimated pieces of hand baggage. | Estimated weight. |
|-------------------|-----------------------|--------------------------|-----------------------------------|-------------------|
|                   |                       |                          |                                   | <i>Tons.</i>      |
| Rhyndland .....   | 488                   | 209                      | 400                               | 14                |
| Belgenland .....  | 1,010                 | 502                      | 211                               | 26                |
| Switzerland ..... | 686                   | 321                      | 551                               | 20                |
| Noordland .....   | 1,012                 | 415                      | 712                               | 27                |

The figures are rather an underestimate, particularly the number of pieces of hand baggage.

The inspection of baggage was going on nicely when a serious difficulty arose. Baggage from the interior is bonded in transit at the Belgian frontier. This bonded baggage can not, according to the regulations of the custom-house, be opened on Belgian soil. The opening of this baggage was tolerated by the good will of the custom-house officials, and the inspection of the same was going on undisturbed until the commission of emigration filed an official complaint calling the attention of the custom-house inspector to this breach of their rules and regulations. This put a stop to the proceedings.

The commissioner of emigration was induced to withdraw his objections; but then the custom-house inspector said that as the complaint was on file he could not permit the opening of bonded baggage without the consent of the higher authorities. The question was then referred to the governor of the province, and by him to the sanitary board. The sanitary board passed a unanimous vote in favor of allowing the inspection. This decision, with all the correspondence, was referred to the minister of finance at Brussels. Then the question met with more delays, and, our request remaining unanswered, I appealed to our minister, the Honorable James S. Ewing, for aid. He presented the matter to the Belgian authorities and requested a speedy answer. In the meantime the inspection and disinfection were carried on under many difficulties.

The steamship is not considered Belgian soil, and it is not supposed that bonded articles—which I rejected—be removed from the ship.

The whole subject became very complicated, besides the interference to the loading of the ship which the work caused.

After several weeks of anxiety the privilege was granted, as the following letter indicates:

“ADMINISTRATIONS DES CONTRIBUTIONS DIRECTES,

“DOUANES AND ACCISES,

“Anvers, le 21 août 1893.

“MESSIEURS: According to my telegram of the 19th of August, No. 21948, I have the honor to inform you that in conformity with my colleagues of the department of agriculture and of the department of industry and of the department of public works, and of the department of foreign affairs, the minister of finance authorizes the examination as well as the disinfection of baggage in bond of the emigrants bound to the United States.

“These operations, which will take place in one of the inclosures situated on the quai du Rhin, opposite the wharf of the Red Star Line, will be done under the surveillance of the custom-house officers, with the supervision of the Government commissioners of emigration and the physicians of this service.

“Further, to satisfy the request of the minister of agriculture, the minister of industry, and the minister of public works, the superior authorities have instructed me to ask the communal administration of Antwerp to invite the local medical commission to coöperate with the commissioners of emigration for the purpose of organizing the examination and disinfection of the baggage in question in such a way that the public health does not suffer by it.

“We are, sirs, etc.,

“A. LAMBRECHTS,

“*Provincial Inspector for the Director on leave.*”

The inspection of baggage disclosed the fact that many emigrants persisted in bringing along feather beds, down quilts, and articles forbidden entrance into the United States (U. S. Quarantine Laws, Art. VII, sec. 1) despite our warnings.

In consequence the following circular was widely distributed, with good effect:

[Circular 141 A.]

#### BAGGAGE—IMPORTANT.

“We again warn very particularly against the bringing of old bedding, as mattresses, feather beds, pillows, quilts, and the like, as their entrance into the United States is forbidden.

“Sheets and linen, as coverings, pillow slips, shirts, etc., must be thoroughly washed before they are packed.

“Steerage passengers must be in Antwerp with their baggage at least two days previous to embarkation in order to insure their passage.

“ANTWERPEN, April 7, 1893.”

Despite our circulars and letters, some annoyances and delays were caused by the lack of interest shown by the agents and brokers of freighters in complying with the formalities required by the United States quarantine laws. This to a certain extent seemed unavoidable, for the manifest of the cargo is not finished until the last moment. The articles and ship's papers come down from the consulate shortly before the ship is ready to clear away, and there is an utter lack of discipline and control over the crew on shore. They report for duty just about as the gang plank is being hauled in, and are usually drunk and unmanageable.

It was necessary to make a firm stand with freighters, and the delaying of a few that did not comply with the requirements of the law brought order out of



chaos, and now, as a rule, the crew, the articles, the manifest, and the ship are ready for inspection when I make my visit.

When a freight boat arrives in port I am informed of the fact and the probable time of unloading the various cargo spaces, so that I may examine the bilges if necessary. At the same time a statement from the master is sent me certifying to the health of the crew during the voyage to Antwerp.

One of these certificates is given herewith:

“ANVERS, *le 25 May, 1893.*

“STEINMANN & Co.:

“We, undersigned captain and first officer of the Belgian steamship *Herrmano*, hereby declare that no sickness of any kind has occurred on board the said steamer during the last trip from Antwerp to New York via Boston and back again, from April 2 to May 20, 1893.

“D. MEYER, *Captain.*

“H. HUSSELMAN, *First Officer.*”

In case of passenger boats the physician sends me a copy of his record of sickness during the voyage. These facts and the fact from whence the ship comes are the chief factors weighed in determining whether the ship should be disinfected or not.

The next move was to prevent diseased emigrants being forwarded from the interior to Antwerp. In order to stop this the company sent out a circular, including the following sentence, placing the responsibility with the agent:

“The greatest trouble is in answering the question, ‘Are you healthy?’ The American authorities are very particular concerning this point, whereas the passenger and the agents pay very little attention to it. We again emphasize that no passenger should be sent to Antwerp who is not physically and mentally sound and healthy. If any passenger is sickly or is suffering from a disease or eruption which is curable he should be treated at home until entirely well. With little children special attention should be paid to eruptions and diseases of the scalp, because it sometimes happens that entire families are detained because the baby has a trouble of this character. If the passenger is suffering with a deformity or illness no attention is to be paid to the fact that he has relatives in America or that he is being accompanied by such.

“We again emphasize the fact that passengers must be in our office, with the question list properly answered, by at least 9 o’clock in the morning of the day prior to sailing. We do not guarantee the embarkation of passengers who come too late or whose question lists are not in order, the agent being responsible for delay.”

This appeal met with a gratifying response and the number of rejected emigrants seemed gradually to decrease. In many instances emigrants or agents would write in advance to the company explaining some deformity or presenting a physician’s certificate of some chronic diseases. These communications were often referred to me for decision.

In this connection it is well to state that an emigrant to America via Antwerp is a foreigner on Belgian soil, and a very unwelcome resident if detained or rejected on account of sickness or deformity or poverty. Formerly emigrants too poor to pay their passage money were thrown upon the charity of the city.

It appears the Belgian commission of emigration was appointed not only to look after the interests of its Kingdom, but also to protect the helpless emigrants, who in many cases were imposed upon by heartless individuals.

In all cases of detention or rejection the commissioner of emigration is entitled to a satisfactory explanation of why that particular emigrant is not permitted to sail.

An emigrant is not allowed to land in Belgium without a ticket that will take him out of the country or sufficient money to take care of himself.

The commissioners have made a ruling that no emigrant be allowed to float on the city unless he has 500 francs.

In several instances Russians by boat from Libau were prohibited from landing in Antwerp because no one would guarantee their passage and they had not enough money to comply with the requirements.

The commission also look after the general welfare of the emigrant—see that the sexes are properly separated on the boat, and such general duties looking to the protection of a friendless wanderer on a foreign soil.

#### SANITARY CONDITION OF THE PORT.

During the entire half year of 1893 Antwerp has suffered from the prevalence of smallpox, which attained the proportions of a small epidemic during the winter months. The disease gradually abated with the onset of warmer weather.

Smallpox is looked upon as a minor illness in Antwerp and there is no fear in the public mind concerning the disease.

Vaccination is not popular nor compulsory, except in the children of the communal schools, and only a small proportion of the inhabitants have the operation performed. Of the cases treated at the hospital 70 per cent occurred in the unvaccinated, the remainder in those who were vaccinated, but in all cases at least five years before being stricken with the disease.

From the 1st day of January to the 16th day of August 860 cases were treated at the hospital (Stuivenberg), with 192 deaths. Besides these, there were many cases in private houses in many sections of the city, and several hundred cases at Borgerhout and Berchem, outskirts of the city.

The following table is compiled from the official figures as found in the Rapport Hebdomadaire and shows the cases treated at the city hospital during the time named. The cases in private houses in Borgerhout and Berchem are not included.

| For the week ended— | Total deaths. | Cases under treatment at city hospitals. | Deaths at city hospitals. |
|---------------------|---------------|--|---------------------------|
| 1892.               |               |  |                           |
| November 26 .....   | 3             | 16                                       | 3                         |
| December 3 .....    | 4             | 18                                       | 3                         |
| December 10 .....   | 2             | 19                                       | 2                         |
| December 17 .....   | 5             | 28                                       | 4                         |
| December 24 .....   | 9             | 17                                       | 6                         |
| 1893.               |               |  |                           |
| January 1 .....     | 9             | 14                                       | 6                         |
| January 7 .....     | 5             | 41                                       | 1                         |
| January 14 .....    | 11            | 57                                       | 7                         |
| January 21 .....    | 11            | 76                                       | 9                         |
| January 28 .....    | 9             | 78                                       | 5                         |
| February 4 .....    | 19            | 87                                       | 10                        |
| February 11 .....   | 17            | 73                                       | 10                        |
| February 18 .....   | 17            | 73                                       | 14                        |
| February 25 .....   | 21            | 85                                       | 12                        |
| March 4 .....       | 20            | 68                                       | 11                        |
| March 11 .....      | 6             | 64                                       | 6                         |
| March 18 .....      | 9             | 74                                       | 2                         |
| March 25 .....      | 13            | 73                                       | 4                         |
| April 1 .....       | 7             | 82                                       | 4                         |
| April 8 .....       | 13            | 94                                       | 8                         |
| April 15 .....      | 13            | 79                                       | 8                         |
| April 22 .....      | 11            | 73                                       | 5                         |
| April 29 .....      | 9             | 80                                       | 10                        |
| May 6 .....         | 16            | 84                                       | 5                         |
| May 13 .....        | 11            | 93                                       | 9                         |
| May 20 .....        | 15            | 97                                       | 12                        |
| May 27 .....        | 13            | 93                                       | 7                         |
| June 3 .....        | 7             | 86                                       | 5                         |
| June 10 .....       | 6             | 71                                       | 10                        |
| June 17 .....       | 15            | 77                                       | 2                         |
| June 24 .....       | 9             | 58                                       | 8                         |
| July 1 .....        | 6             | 45                                       | 3                         |
| July 8 .....        | 5             | 37                                       | 2                         |
| July 15 .....       | 3             | 32                                       | 1                         |
| July 29 .....       | 3             | 28                                       | 1                         |

The registrar at the Hotel de Ville, the directors, and visiting chiefs at the various hospitals have been uniformly courteous in showing me the cases and in allowing me to examine the sanitary records.

There is no registration of cases occurring in private houses. I have therefore only given the official figures of cases treated at the city hospitals and the total number of deaths. These figures have steadily increased since the first of the year.

It is of interest to note that the local medical commission considered the disease to exist in epidemic form in December of 1892, in which month 20 deaths were reported. Since then the disease has become more distributed. In March of the present year there were 48 deaths, in April 53 deaths, and in May 55 deaths, from the disease in the city, exclusive of the suburbs.

In this connection it is well to state that an apparently valid objection to vaccination has been raised by the firemen of ships about to leave the port. It was stated that on account of their work in the dust and heat of the fire-hole they would suffer unusual effects. I have taken the pains to question the firemen of returning crews that had been vaccinated since my arrival in Antwerp, and from an experience of four months I can state that the objection is theoretical.

In the first week of June there was one case of cholera in the city, in a woman, resident of Antwerp, who recovered.

No new cases occurred until the last week of July, when two were reported. The cases occurred in sisters living on a boat in one of the basins. One died on the boat; the other was treated and recovered at the hospital.

The basins are artificial excavations, intended to increase the wharfage space of the port. They are connected with the river by means of narrow sluices, guarded with locks, only open at high tide, so that there is very little change of water. In consequence the water gets dark, stagnant, and rather repulsive. The basins extend several hundred meters inland, and are for the smaller craft, lighters, and freight boats.

Many of the cases of cholera which occurred here last year were reported from the small craft lying in these basins, or "doks" as they are called.

It is thought that the lighters bring the disease with the infected waters of the canals from the interior to Antwerp. These barges and lighters come into Antwerp without any supervision or quarantine.

The canals which these barges navigate intersect the entire kingdom.

During last summer 175 cases and 62 deaths from the disease were reported.

#### ANTWERP'S WATER SUPPLY AND SEWERAGE SYSTEM.

The larger moiety of the inhabitants of the city derive their water supply from shallow wells and from rain water, which is collected from the tiled roofs of the houses and stored in underground cisterns.

The rain water is bad from long storage. The rainfall is irregular and insufficient.

The well water is clear in the southern section of the city, and, as a rule, free from unpleasant odor or taste; but it is hard and suspicious, because the wells are sunk near cesspools.

Excreta are not allowed to be drained into the sewers, which are only for the waste waters of the household and overflow rain water. Water closets not being used, the system employed is on the conservancy plan, in middens, which are pumped out at intervals.

The other source of water and the supply which is largely used by the shipping interests is brought about 10 miles in iron conduits from the River Nêthe—a branch of the Scheldt.

The River Nêthe is a small, rapidly flowing stream with two strong tidal movements daily.



The intake is at Waelham. The town of Duffel, with 5,934 inhabitants, is situated on the river a few miles above the intake.

It has been shown by experiments with floating bottles that the tidal movement brings the waste waters of Brussels (482,525 inhabitants) and the waste waters of Malines (51,558 inhabitants) up to the pumping station at Waelham.

In order to eliminate this latter factor the water is taken into the decanting basin three hours after flood tide and stored there for the day's supply.

The river water at the pumping station has a dirty brown-black color, smells offensively, and is admitted to be very bad. It deposits a heavy sediment, is hard, contains rather a large percentage of free and combined ammonia, of nitrates and dissolved organic matter.

The bacteriological examinations give us as a rule 250,000 colonies to the cubic centimeter.

This water is purified by means of the Anderson process and afterward filtered through sand, so that it is furnished to the consumers clear, aerated, and without smell, but a peculiar taste like that of rain water, said to be due to its softness. There is an absence of free ammonia, a marked diminution of the albuminoid ammonia and the dissolved organic matter, and a decided decrease in the number of germs.

The bacteriological examination of the water as it flows from the faucet frequently gives specimens containing less than 100 colonies per cubic centimeter.

The Anderson process for the purification of river water was first put into practical application at Antwerp in 1885, although previous to this date iron had been used for the purification of the water in the form of filters. These filters, which consisted of layers of Bishop's spongy iron and sand, soon became clogged and useless.

Since the success obtained by the Anderson process at Antwerp has been established several other smaller cities, including a suburb of Paris, have adopted a similar process, using iron to purify their waters.

Although the purification of river water by iron eliminates from 45 to 85 per cent of the organic matter and effects a marked diminution of the nitrates, albuminoid ammonia, and other elements usually considered noxious, it does not pretend to eliminate the factors of contagious diseases, as cholera, typhoid fever, etc.

The investigations have shown that the iron has no effect on the number of bacteria in the water. The diminution of the number of germs is a result of the filtration through sand. In this sand filtration the water of the River Nêthe acts favorably, owing to its biological character. A scum of green algae about a quarter of an inch thick grows on the surface of the sand. The gelatinous zoögleal masses of bacteria grow in the meshes of this matted carpet and so effectually strain the other bacteria and all suspended matter that the underlying sand does not lose its clean, gray color, consequently the cleansing of the filters is an easier process than that of other sand filters which I have seen.

The principle of the Anderson process consists in the production of an intimate contact between metallic iron and the water to be purified. The action of the iron is one of reduction to be followed in the water leaving the apparatus by one of oxidation. The carbonic acid acts upon the metal, forming ferrous carbonate.

On being exposed to the air the ferrous salt is converted into ferric oxide ( $\text{Fe}_2\text{O}_3$ ) and the  $\text{CO}_2$  liberated as a gas.

In the practical application the river water is passed through revolving iron cylinders containing a system of shelves arranged in such a manner that the particles of spongy iron are showered down through an onward-flowing stream of water. The water leaving the revolving cylinder contains the ferrous salt and is allowed to flow over a cascade for aeration and there remain several hours in subsiding basins until all the iron is oxidized. From the subsiding basins the water flows on to the filtering beds.

The brownish color of the water in the subsiding basin owing to the red oxide of iron is pronounced.

The amount of organic matter oxidized depends largely upon its origin.

Organic matter of animal origin is unstable and easily broken up; organic matter of vegetable origin is more difficult to oxidize.

The waters of the Néthe in time of drought contain a rather high percentage of vegetable organic matter which it obtains from the peaty stratum which underlies the alluvial soil of the valley of the river. This always gives trouble at the waterworks, for the ammonia, not being entirely eliminated, dissolves the iron rust from the 10 miles of piping and makes the water rust-stained as it flows from the faucets at Antwerp, although it is clear as it leaves the filtering beds.

This water as supplied to the inhabitants of Antwerp can not be commended for its potability, but it is the best at hand, and is at least at present free from the suspicion of carrying infectious diseases, excepting perhaps typhoid fever.

This water has been used by the boats of the Red Star Line for some years and has given satisfaction. On account of the present uncertainty, it was decided by this company to take the precaution of boiling all the water for drinking purposes. The order was issued and will go into effect for all the boats in their west-bound passage.

It is not possible for boats to contaminate their supply with Scheldt water, because the river is brackish at Antwerp, although quite 40 miles from the sea.

But it is said small crafts for economical reasons take water from an old creek that ends in a blind tank near the docks (Canal des Brasseurs). This water is very bad. I have made arrangements with Prof. Kenna, of the waterworks company, by which I can know for each boat the source of supply. The arrangement consists of a certificate, of which the following copy is introduced.

#### ANTWERP WATERWORKS COMPANY, LIMITED.

We, the undersigned, Ad. Kenna, Dr. Sc., manager, hereby certify that the ship named —, of which is master —, has on this day — been supplied with — hectoliters of the company's water, after the tanks of the said vessel have been cleansed according to the instructions of the medical office of the U. S. Marine-Hospital Service.

\_\_\_\_\_,  
*The Superintendent of the Shipping Supply.*

\_\_\_\_\_,  
*Manager Antwerp Waterworks Company.*

It is manifestly impossible for our inspector on this side to examine the fresh-water tanks of every steamship—to see that they are emptied and scrubbed and properly cemented or limed before filling, so that this cooperation of the waterworks company is a relief.

This decision in favor of the water of the river Néthe to the other sources of supply in Antwerp corresponds to the decision arrived at by Dr. W. Collingridge, medical officer of health of the port of London.

#### NUMBER OF VESSELS.

The records for the year 1892 show an average of 22 ships per month leaving Antwerp for the United States.

During the four months, April, May, June, and July of 1893, I issued 88 bills of health, being also an average of 22 vessels per month.

Besides this there is the Hansa Line to Canada and several boats which make Antwerp a port of call.

## CHARACTER OF VESSELS.

With reference to the character of the vessels, I have the honor to report that the ships leaving this port for the United States may be divided into four classes: (1) Passenger boats; (2) freighters, regular liners, and tramps; (3) petroleum tank steamers; (4) sailing vessels.

Passenger boats are those of the Red Star Line (International Navigation Company), the Hansa Line (Hamburg-American Packet Company), and the French Line (Compagnie Commerciale de Transport).

The Red Star Line is the only passenger line having its home port in Antwerp; biweekly sailings (Wednesdays and Saturdays).

The Hansa Line comes from Hamburg, making Antwerp a port of call en route to Montreal; weekly sailings (Tuesdays).

The French Line from Havre stops at Antwerp on the way to New Orleans; monthly sailings.

The boats of the Red Star Line are cleanly, well kept, and the newer ones are supplied with many modern conveniences. The older ones were for the most part deficient in ventilation. This was largely corrected as the ships came into port.

All the upper steerages of the boats of the Red Star Line are subdivided by wooden partitions into rooms, each of which have 24 to 28 berths. These partitions cut up the air space, prevent free circulation of the air, and shut out much of the light. The only advantage claimed for this subsectioning is the measure of privacy which it lends. Families and the better classes of emigrants always prefer these rooms to the open system of bunks, which are built in the lower steerages (zwischen deck).

All the berths of the line are built of wood. The compartments as well as the berths are painted each trip with a mixture of lime, water, and glue. This combination makes an admirable whitewash. The glue holds the lime so that it does not come off, even with brisk rubbing. Its cheapness and superiority from a hygienical point of view render it preferable to paint.

Each emigrant is furnished with a bag of straw, which serves him for a mattress. The bag is washed and the straw renewed each trip.

The emigrant must supply any other bedding that he may wish to use.

Steerage passengers are furnished tables for eating. The food is served and the dirty dishes removed by the stewards.

There is a small iron tank with a constant supply of water for drinking purposes in each steerage compartment. Spring stopcocks prevent undue waste. In accordance with a recent order the water is first boiled.

A constant stream of water is kept flowing through the latrines and water-closets while the ship is at sea.

The bilges are cleansed and scraped in the usual way. If there is any odor carbolic acid is poured into each bilge.

It is difficult to keep freighters clean in port, particularly tramp steamers. The crew is discharged when the ship ties up at the dock, and only recommence their duties when the vessel leaves port. The stevedores keep things upset and in confusion. The coaling tends to make everything black.

The forecastles are, as a rule, painted dark brown or drab, so that the dirt does not show. I have recommended to several captains to scrape off the paint and coat the bunks and walls every trip with a mixture of the lime and glue mentioned above. This in several instances has been done.

The water-closets for the crew of freighters have no flushing arrangements and as they are not washed while the boat is in port, they are apt to become clogged and foul.

The tank steamers, from the simplicity of their construction and the character



of their cargo, are, from a hygienical point of view, perhaps the most satisfactory ships which clear from here for the United States. They bring petroleum to Antwerp and return in water ballast. This water is taken from the basins, where it becomes rather stagnant. Captains are advised to pump it out at sea and take in salt water. This they declare to be practical.

Sailing vessels leaving here are mostly for ports on the Pacific coast. The bulk of their cargo is glass, cement, and wines.

These boats are for the most part kept clean and sweet. The crews average a better class of men than those on steamships.

The sailors' forecandle on these sailing ships is situated amidships, built up on the main deck and divided by a longitudinal partition for the two watches. These forecandles are light and airy and easier to keep clean than those in the bow of a steamship.

The apprentice boys bunk aft with the officers and usually enjoy fair sleeping space.

It was the custom for freighters to leave port in a dirty condition and trust to cleaning up at sea, but now a clean bill of health is not issued unless the ship is in a good sanitary condition.

#### NUMBER OF EMIGRANTS.

During four months of 1893 there was a total of 16,406 steerage passengers—mostly emigrants taken by the Red Star Line from here to New York and Philadelphia, as follows: During April, 3,938; May, 3,263; June, 4,673; July, 4,532; total, 16,406.

#### CHARACTER, NATIONALITY, AND TOTAL NUMBER OF EMIGRANTS.

The character of the emigrants passing through Antwerp may be characterized as fair.

The principal nations represented are Germany, Austria, Belgium, England, Italy, Luxemburg, Switzerland, Holland, Russia, and France.

The larger numbers come from Germany, Austria, and Hungary. A comparatively small number come from Italy, Russia, and Galicia.

Lately numbers of Arabs, Armenians, and Greeks have been passing through Antwerp.

The following figures are taken from the report of the Belgian commissioner of emigration and show the total numbers and the nationality of the emigrants embarking at Antwerp for the States for the years 1890, 1891, and 1892:

| Country.         | 1890.  | 1891.  | 1892.  |
|------------------|--------|--------|--------|
| Germany.....     | 14,660 | 20,440 | 17,333 |
| Austria.....     | 6,442  | 9,267  | 11,739 |
| Russia.....      | 3,000  | 4,220  | 806    |
| Belgium.....     | 1,987  | 2,718  | 3,840  |
| England.....     | 1,460  | 1,013  | 1,545  |
| Italy.....       | 761    | 1,557  | 1,508  |
| Luxemburg.....   | 1,053  | 1,372  | 1,332  |
| Switzerland..... | 1,074  | 920    | 1,226  |
| America.....     | 795    | 714    | 998    |
| Holland.....     | 485    | 635    | 968    |
| France.....      | 480    | 623    | 438    |
| Scattering.....  | 373    | 249    | 177    |
| Total.....       | 32,550 | 43,728 | 41,910 |

#### CANADIAN PASSENGER LINE.

Through the efforts of Surg. W. A. Wheeler, Marine-Hospital Service, I received on June 12, 1893, an invitation from the Hamburg-American Packet Company to examine the emigrants embarking at this port for the Hansa Line.

The Hansa Line has weekly sailings during the summer; comes from Hamburg and makes Antwerp a port of call en route to Canada. The boats take an average of 150 emigrants from here every week.

The majority of the passengers embarking here are emigrants for Chicago and the Northwestern States. A number are destined to Canada, Winnipeg, or Vancouver, with no intention of going into the States.

They average a fair lot and are required to carry out the same programme as those for the Red Star Line.

#### HOUSING AND HANDLING OF EMIGRANTS.

Emigrants come to Antwerp by train and by boat at all hours of the day and night.

They are met at the station or dock by runners from the hotels and conducted, according to nationality, to the various hotels in the city.

There are 13 hotels in various quarters of the city which have been set aside for the exclusive use of emigrants.

The emigrants are classified according to nationality. This division is closely adhered to. The classification is as follows:

| Hotel.                     | Receive only those from— |
|----------------------------|--------------------------|
| Hotel Limburg.....         | Russia.                  |
| Hotel Stad Brugge.....     |                          |
| Hotel Chicago.....         |                          |
| Passagier Hotel.....       |                          |
| Hotel Wiesbaden.....       | Switzerland.             |
| Nassauer Hof.....          | Italy.                   |
| Gasthaus zur Hoffnung..... | Rhine provinces.         |
| Hotel New York.....        | Germany.                 |
| Hotel Philadelphia.....    | Hungary.                 |
| Elsässer Hof.....          | The Netherlands.         |
| Hotel Baudry-Suarre.....   | Galicia.                 |
| Hotel Luxembourg.....      | Southern Germany.        |
| Hotel Stadt Frankfurt..... | Walloons.                |
|                            | Luxemburg.               |
|                            | Tyrol and Bavaria.       |

This separation according to districts of origin has much to recommend itself.

The hotels accommodate from 30 to 200 guests, and although some of them are rather deficient in ventilation and the modern conveniences usually found in newer buildings, still they are admirably suited for their purpose.

Should disease break out in any one of the hotels it would be a comparatively easy matter to disinfect and detain those occupying the hotel at the time.

This actually occurred on the 1st of July, when at Hotel Esperance a case of varioloid came to light in one of the Hungarians detained there under observation.

The house was at once quarantined, the patient sent to the hospital, and the 38 emigrants occupying the hotel at the time vaccinated.

Those in whom the vaccination proved successful were allowed to sail on the next Saturday's boat, being seven days' detention. They were first bathed and their clothing disinfected at the Asile de Nuit.

The remainder were kept awaiting developments the full fifteen days of incubation of the disease.

I took a list of the names of the 38 emigrants, so that I had a good check that they would actually serve out their time.

The hotel was cleansed, aired, and disinfected by the authorities.

The hotels are visited by Dr. De Fraysses, the superintending surgeon of the Red Star Line; and every month they are inspected by the Belgian Commission of Emigration. Each one of the thirteen buildings are disinfected with sulphur dioxide at least once each month, whether disease exists or not. Chloride of lime and carbolic acid are liberally used about water-closets, latrines, etc.

The hotel keepers are all anxious to follow out any suggestions from the steamship company, for their patronage depends upon the faithfulness with which they obey directions concerning the handling of the passengers and their baggage, and upon the cleanliness of their hostleries.

#### BATHING OF EMIGRANTS.

Emigrants are required to be clean when presented for inspection. The hotel keepers are held responsible for presenting untidy applicants.

Emigrants from infected localities are bathed and have their clothing disinfected at the Asile de Nuit.

The Asile de Nuit is a magnificent charity, designed to shelter and clothe the destitute in winter. Fortunately for our purposes it is not used during the summer, and has been placed at the disposal of the Red Star Line through the personal kindness of the management.

There are accommodations for bathing 14 at one time. There is an abundant supply of warm water and plenty of soap. The constant attention of the attendant is required, for most of those washed must first be taught what bathing means.

During the bath another attendant collects the clothes which have been placed in front of each bathroom and carries them to the basement for disinfection.

The disinfection plant consists of a roomy steel chamber, walled in with bricks. The truck is suspended on rollers, and is designed to receive the clothes by hanging them on hooks. There is provision for dry heat and live steam, being in all respects a model disinfecting apparatus.

The emigrants, in the meantime, who have finished their bath are supplied with long woolen gowns in which they must await their clothing from the disinfecting room.

Before the emigrant is sent back to his hotel he is given a card, with name and date, and the stamp of the Asile de Nuit, which is a guaranty that he has passed through the process.

#### DISINFECTION OF BAGGAGE.

The baggage to be disinfected is steamed in one of the compartments of the ship. This method is very unsatisfactory, and owing to the lack of interest in the work shown by the workmen placed at my disposal constant watching is necessary to have the disinfection properly carried out.

#### DISINFECTION IN THE COMPARTMENT OF A SHIP.

From the observations made here it does not seem possible to obtain a temperature of 100° C. in one hour's time.

In these observations the temperature is taken with a self-registering maximum thermometer suspended in the compartment so that the instrument swings about a foot from the floor.

The following is a table of 8 observations, and shows the maximum temperature obtained to be between 89° and 98° C.:

| Name of vessel. | Date.   | No. of compartment. | Size.              | Diameter of steam pipe. | Time of steaming. | Boiler.    | Pressure in boiler. | Maximum temperature. |
|-----------------|---------|---------------------|--------------------|-------------------------|-------------------|------------|---------------------|----------------------|
|                 | 1893.   |                     | <i>Cubic feet.</i> | <i>Inches.</i>          |                   |            | <i>Pounds.</i>      |                      |
| Rhyndland ..... | June 16 | 4                   | 9,130              | 1.5                     | 1 hour...         | Donkey ..  | 90                  | 89.5° C.             |
| Pennland .....  | June 20 | 1                   | 9,455              | 1.9                     | do .....          | do .....   | ?                   | 97 ° C.              |
| Westernland ..  | June 23 | 4                   | 16,264             | 1.5                     | do .....          | Main ..... | 75                  | 93.5° C.             |
| Noordland ..... | June 30 | 4                   | 12,967             | 1.5                     | 1½ hours..        | Donkey ..  | 75                  | 98 ° C.              |
| Waesland .....  | July 7  | 3                   | 16,824             | 2.0                     | 1 hour...         | do .....   | 75                  | 97 ° C.              |
| Illinois .....  | July 3  | 3                   | 9,600              | 1.9                     | do .....          | Main ..... | 112                 | 97 ° C.              |
| Switzerland ..  | July 11 | 2                   | 7,277              | 1.5                     | do .....          | Donkey ..  | 60                  | 97.5° C.             |
| Friesland ..... | July 14 | 6                   | 13,060             | 1.5                     | do .....          | do .....   | 63                  | 98 ° C.              |



A small chamber is selected and care is exercised that all of the compartment is above the water line. The hatches are calked and covered with tarpaulin. The ports are screwed close, the ventilators tamponed.

The large surface presented for condensation and the rapid radiation through the thin iron walls are matters not capable of correction.

The greatest practical difficulty in steam disinfecting in a ship's compartment is to drive out the air. This arises from the size and shape of the chamber, and from the fact that the opening for the exit of the air is just the contrary to what it should be in a well-appointed disinfector.

Even though the temperature has not in any case reached 100° C., still in two instances the pressure has blown off the hatches. This is explained by the expansion of the heated air remaining in the compartment.

I find that with even a certain amount of care wearing apparel comes out of this steaming somewhat the worse for the process. It is difficult to keep linen clean and clothing tidy under the circumstances. The articles come out wet or damp. The process is far from elegant.

As a rule, a steamship does not use its main boiler while in port. The donkey boiler is of fair size, being required not only to drive the donkey engine, but also the several winches and dynamos for electric lighting. It is interesting to note that on the two occasions on which the main boiler was used the thermometer did not register as high a temperature as on several occasions with the smaller boiler.

Considerable delays were met with in obtaining the ground and the privilege from the city to construct the disinfection installation, but at the present writing the building is nearing completion and it is hoped will soon be ready for use.

#### DESCRIPTION OF THE DISINFECTING PLANT.

The disinfecting and bathing installation is being built opposite the quay, within easy reach.

The structure is 44 by 18 meters, built substantially of brick and iron, with sky and side lights.

The building is divided transversely so as to establish a receiving or "infected" side and a distributing or "sterile" side.

Two boiler-iron disinfectors, rectangular in shape, stand in the middle of the building. Each disinfector is 6.8 by 3.0 by 3.25 meters in size.

On the right of the disinfectors are two rows of baths, fourteen in all.

On the left of the disinfectors is a tank for carbolic solution and the division for the steam boiler.

The idea is to have the emigrant pass through on the right, where he will be bathed; to have his clothing pass through one of the disinfectors, where it will be steamed, and to have his shoes, hat, valise, etc., pass through on the left, when they will be immersed in the carbolic solution.

The emigrant and his possessions are assembled on the sterile side, and then passed on to the boat or barracks, as the case may be.

The disinfectors are not double walled, although they have the usual serpentine of steam pipes for dry heat, as well as the connections for live steam.

The trucks run through on rails from one side to the other, the doors closing by steam-tight fitting at each end of the disinfectors.

The general plans and details are given herewith.

At the present writing all the masonry and ironwork is finished.

#### CHARACTER OF MERCHANDISE.

The bulk of the cargo from this port consists of glass, ironware, cement, mineral waters, wines, silks, wood pulp, and new manufactured articles, free from the suspicion of carrying infection.

Of the exports arising in this consular district, and over which this consulate has direct control, are two articles deserving special mention—feathers and skins.

The feathers are used for bedding. The “raw” feathers come in compressed bales from China. They are cleansed and prepared here by Messrs. D. & Co., whose warerooms I have visited for the purpose of inspecting the process.

The feathers are first picked clean of adhering material and then assorted. They are then exposed ten to fifteen minutes to steam under pressure in iron cylinders with revolving “mixers,” which keep the feathers agitated and in contact with the steam. They are then passed to another cylinder and exposed to hot air until thoroughly dry. They are passed a second time into the steam cylinder. This time the steam is saturated with creoline. The feathers are again dried. Sometimes the process is repeated a third time. The object of all this is to destroy the organic matter clinging to the feathers and kill all germs that might give rise to putrefaction.

The process insures a good disinfection, and the feathers which have passed through this process are passed without question.

The skins come from Australia and are prepared here for tanning in our country.

On the occasion of my visit of inspection to the warehouse of Messrs. V. & Co. the process of preparation shown to me was as follows: The skins are soaked in hot water and all the hair and subcutaneous tissue scraped off. They are then soaked three or four weeks in a saturated solution of chloride of lime, washed in water, and then pickled in weak sulphuric acid. They are shipped in the acid, wetted, in casks.

Skins prepared in this manner are also passed without further formality.

Chicory and acorns, which are sent in rather large quantities from here, I believe are used at home for the adulteration of coffee.

A considerable number of cases of household furniture are brought to Antwerp for shipment. These are usually invoiced in an interior consular district. They contain the upholstered furniture and bedding of the family who have probably migrated some months before. In one instance eleven cases which had already been refused at Hamburg were brought here for shipment. The rule forbidding old upholstery and feather beds is enforced in all such cases.

Flax waste is the short fiber, too short for weaving. It is compressed into bales the same as new cuttings, which also occasionally come through the interior. These are both used in the United States for paper making. They are inspected; but disinfection is not required if coming from a free district.

Bagging in which grain is shipped from America practically does not leave the ship. The grain is emptied down chutes into a lighter. As long as the vessel is free from suspicion no disinfecting is required.

Bagging which leaves the ship for the city or the interior is returned in bales like rags, and treated as such, disinfection being required.

Rags come in large quantities from the interior of Belgium to Antwerp. They are accompanied by certificates of health, of origin, and of disinfection by sulphur.

The consul here has declined to sign invoices of rags arising in this consular district on account of the prevalence of smallpox. It has been intimated that it would be a relatively easy matter to send these rags to a neighboring or distant consular district and have them invoiced from there, for it is a practical impossibility to know just where any given bundle of rags may have been gathered.

A CONDENSED STATEMENT, BY MONTHS, OF THE NUMBER OF VESSELS INSPECTED, INCLUDING OTHER ITEMS IN THE WEEKLY ABSTRACTS OF BILLS OF HEALTH.

*April.*—Beginning with the 7th there were 15 boats inspected during the month, 12 being steamers, 2 ships, and 1 bark. Nine were bound for New York, 2 for Baltimore, and 1 each to Savannah, San Francisco, Philadelphia, and Pensacola.

A total of 914 in the crews.

There were 391 cabin passengers and 3,938 steerage passengers.

*May.*—During the month 13 boats were inspected, of which 12 were steamers and 1 bark. There were 9 bound for New York, 2 for Philadelphia, and 1 each for Baltimore and San Francisco.

There was a total of 662 in the crews. Three hundred and twenty-six cabin passengers and 3,263 steerage passengers were inspected. Of these, 1,597 from Hungary, 206 from Russia, 75 from Galicia, and 39 from Marseilles were detained under observation as coming from cholera-infected districts.

A total of 1,970 pieces of baggage was inspected, of which 539 were disinfected.

*June.*—During the month of June 31 vessels were inspected, of which 27 were steamers, 3 barks, and 1 ship. Of these, 15 were bound for New York, 3 for Boston, 3 for Philadelphia, 3 for New Orleans, 4 for Baltimore, and 1 each to Galveston, Portland, Oreg., and Tybee Bay.

There was a total of 1,557 in the crews; a total of 453 cabin passengers and 4,673 steerage passengers was inspected. Of the latter, 351 from Galicia, 160 from Russia, and 83 from Marseilles were detained, bathed, and their clothing disinfected. There were 1,446 from Hungary, but not all were considered as coming from infected localities. Sixteen from Antwerp were first vaccinated before embarkation.

A total of 4,515 pieces of baggage was inspected, of which 775 were disinfected.

*July.*—During the month of July 29 vessels were inspected; of these, 22 were steamships, 5 ships, and 2 barks.

*Destination.*—For New York, 10; Philadelphia, 6; Baltimore, 3; Boston, 4; Portland, Oreg., 2, and 1 each to Savannah, Port Everett, Charleston, and San Francisco.

A total of 1,384 in the crews.

A total of 442 cabin passengers and 4,532 steerage passengers was inspected, of which 353 from Galicia, 292 from Russia, and 170 from Marseilles were treated as coming from cholera-infected districts.

During the month a total of 2,941 pieces of baggage was inspected, of which 506 pieces were disinfected.

In concluding this report it is a pleasure to be able to state that the work on this side of the ocean has been attended with gratifying results.

Ships have left port in a better condition.

Many articles of merchandise have been disinfected; some refused.

About a thousand sailors have been vaccinated.

A number of undesirable and diseased emigrants have been refused passage. Many have been detained, and the larger majority have been cleansed and put into better condition before embarking. Considerable dirty baggage has been eliminated and much more disinfected.

The fact that none of the passenger boats have so far carried contagious disease out of port is looked upon with satisfaction by the steamship company, who feel that the efforts they have expended have in no small measure aided this good result.

Very respectfully, your obedient servant,

M. J. ROSENAU,  
*Assistant Surgeon, Marine-Hospital Service.*



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REPORT  
OF THE  
COMMISSION APPOINTED TO INVESTIGATE THE  
CHOLERA EPIDEMIC  
AND THE DANGER OF TRANSMISSION OF CONTAGIOUS  
DISEASES FROM FOREIGN COUNTRIES.

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1893.

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## REPORT OF THE COMMISSION TO INVESTIGATE THE CHOLERA EPIDEMIC AND THE DANGER OF CONTAGIOUS DISEASES FROM FOREIGN COUNTRIES.

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*To the Surgeon-General of the Marine-Hospital Service:*

SIR: In compliance with the instructions contained in your letter dated November 26, 1892, relative to investigations to be conducted by us abroad, concerning the present epidemic of cholera, and other matters, we beg leave to submit herewith a report in accordance with the following letters of appointment and instructions:

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,  
*Washington, D. C., November 19, 1892.*

Dr. WALTER KEMPSTER,  
*Washington, D. C.:*

SIR: You are hereby appointed a special agent of this Department, for the purpose of visiting the principal ports and countries of Europe, and there investigating the subject of the cholera epidemic, under such instructions as shall be furnished you by the Supervising Surgeon-General of the Marine-Hospital Service. Your compensation will be at the rate of \$10 per diem, in addition to actual disbursements for transportation, and \$10 per diem as allowance for subsistence and incidental expenses other than transportation, the appointment to take effect from date of oath.

Respectfully yours,

CHARLES FOSTER, *Secretary.*

The following is the letter of instructions:

TREASURY DEPARTMENT,  
OFFICE OF THE SUPERVISING SURGEON-GENERAL,  
MARINE-HOSPITAL SERVICE.  
*Washington, D. C., November 26, 1892.*

*To Surg. Fairfax Irwin, Marine-Hospital Service, and Dr. Walter Kempster, Special Agent Treasury Department, acting under instructions of the Marine-Hospital Bureau.*

SIRS: Having been designated with the approval of the Secretary of the Treasury and the President of the United States for the purpose of visiting foreign ports and places with a view to obtaining information to aid in the prevention of the introduction of cholera into the United States, the following instructions are hereby given you for your guidance. You will proceed together, sailing from New York December 7, for Liverpool and London. En route you will perfect the details of plans for carrying out the purposes of your mission as contained in this letter.

At places abroad, where you may act more efficiently together, you will so serve, but when for the purpose of greater expedition or for any special reason it seems proper that the territory to be covered should be divided between you, you will arrange such division.



Your duties are:

First. To ascertain whether the provisions of Department circulars, copies of which are furnished you, relating to the disinfection of personal baggage of immigrants are being properly carried out at ports of debarkation; and whether appliances have been provided by the steamship companies or other authorities for that purpose.

Second. To ascertain whether rags from infected districts are being shipped to the United States either directly or by transshipment from any one of the infected ports.

Third. To ascertain if the provisions of Department Circular No. 143, requiring disinfection of all rags, are being complied with or evaded.

(Attached is a list of the principal ports from which rags are shipped to the United States. Appendix A.)

Fourth. You will visit the various consular officers and make report upon the methods of certifying true bills of health, and the means taken to require disinfection, the certificates of the consular officers being the means by which assurance is felt by the national and local quarantine officers with regard to the safety or nonsafety of the admission of foreign articles of merchandise and persons.

You are requested to impress upon the consuls the importance of their office as an adjunct to the quarantine system of the United States; and at ports or places where in your opinion, formed after careful canvass of the situation, a medical officer should be detailed or appointed to assist the consuls in sanitary measures, you will make recommendation to that effect.

You are directed to impress upon each consul the necessity of keeping the Marine-Hospital Bureau thoroughly informed in regard to contagious or epidemic diseases, by letter ordinarily, but by cable whenever the circumstances seem to warrant it. The sudden appearance of cholera in the neighborhood of any consular district should be transmitted by cable to the Marine-Hospital Bureau direct; and any unusual event, occasion, or cause that would jeopardize the health of the United States should be cabled at once.

It is expected that your labors will be completed in two or three months. Should it become necessary, your tour may extend through Russia and to the principal ports of entry on the Mediterranean.

Special attention will be given to the character of merchandise shipped to the United States, and to any special danger of the introduction of cholera through this medium.

You will bear in mind the fact of the World's Columbian Exposition to be held in the city of Chicago in the ensuing year, and you will promptly report by cable, if necessary, any danger of the introduction of cholera that may seem evident to you through the medium of the articles shipped to America for the said World's Fair.

Attached is a memorandum for your further guidance.

Respectfully yours,

WALTER WYMAN,

*Supervising Surgeon-General, Marine-Hospital Service.*

*Memorandum.*—Make special inquiry concerning wools, hides, manufactured fabrics, shoddy. The danger to be apprehended from these commodities. Can they be practically disinfected.

Following is the list of principal ports from which rags are shipped to the United States: Königsberg, Stettin, Berlin, Hamburg, and Bremen, Germany; Rotterdam and Amsterdam, Holland; Antwerp, Ghent, and Brussels, Belgium; Copenhagen, Denmark; the ports of Great Britain; Paris, Rouen, Rheims, Havre, Bordeaux, and Marseilles, France; Leghorn, Genoa, and Naples, Italy; Catania, Sicily; Trieste, Austria; Alexandria, Egypt, and Constantinople, Turkey.

Forward, so far as possible, a brief summary of measures taken by the countries or municipalities visited to protect themselves against the introduction or spread of cholera, particularly the measures in England relating to rags, mailing a brief report from each port visited, and a full report when the work is completed.

The Department circulars relating to the disinfection of immigrants' baggage and commodities considered liable to convey contagion, and which prescribe methods to be employed, are as follows:

[Circular.]

PERSONAL EFFECTS AND BAGGAGE OF IMMIGRANTS AND OTHERS FROM DISTRICTS  
INFECTED WITH CHOLERA TO BE DISINFECTED AT PORTS OF DEPARTURE.

1892. Department No. 141.]

TREASURY DEPARTMENT,  
OFFICE OF THE SUPERVISING SURGEON-GENERAL  
MARINE-HOSPITAL SERVICE,  
Washington, D. C., August 17, 1892.

*To Collectors of Customs, Medical Officers of the U. S. Marine-Hospital Service, Agents of Foreign Steamship Lines, Local Quarantine Officers, and others whom it may concern:*

The act approved April 27, 1878, entitled "An act to prevent the introduction of contagious or infectious diseases into the United States," provides that no vessel coming from any foreign port or country where any contagious or infectious diseases exist, or any vessel or vehicle conveying persons, merchandise, or animals affected with any contagious disease, shall enter any port of the United States or pass the boundary line between the United States and any foreign country, except in such manner as may be prescribed under said act.

Furthermore, section 4792 of the Revised Statutes of the United States provides as follows:

"The quarantine and other restraints established by the health laws of any State respecting any vessels arriving in or bound to any port or district thereof shall be duly observed by the officers of the customs revenue of the United States, by masters and crews of the several revenue cutters, \* \* \* and all such officers of the United States shall faithfully aid in the execution of such quarantine and health laws, \* \* \* and as they shall be directed from time to time by the Secretary of the Treasury."

Official information having been received of an epidemic of cholera in Russia, and in view of the large immigration into the United States from said country, and of the danger that exists of the introduction of cholera into the United States through the medium of personal effects of said immigrants, it is hereby ordered that on and after September 18, 1892, no vessel having on board personal baggage, bedding, clothing, etc., belonging to immigrants from Russia, or belonging to immigrants from any cholera-infected district, shall be admitted to entry into the United States unless accompanied by a certificate from the consular officer at the port of embarkation to the effect that said personal effects, baggage, etc., have been disinfected in accordance with the method hereinafter described.

For the disinfection of said articles one or more of the following methods will be used, all articles to be unpacked and freely exposed for disinfection:

1. Boiling in water not less than one hour.
2. Exposure to steam not less than one hour, the steam to be of a temperature not less than 100° C. (212° F.) nor greater than 115° C. (239° F), and unmixed with air.
3. Solution of carbolic acid of a 2 per cent strength.

This method (No. 3) may be applied only to leather goods, such as trunks, satchels, boots, shoes; to rubber goods, etc., the articles to be saturated with the solution.

WALTER WYMAN,  
*Supervising Surgeon-General, U. S. M. H. S.*

Approved:

O. L. SPAULDING, *Acting Secretary.*

This circular was amended as follows:

[Circular.]

PERSONAL EFFECTS AND BAGGAGE OF IMMIGRANTS FROM ALL EUROPEAN AND ASIATIC PORTS TO BE DISINFECTED AT PORTS OF DEPARTURE.

1892. Department No. 147.]

TREASURY DEPARTMENT,  
OFFICE OF THE SUPERVISING SURGEON-GENERAL  
MARINE-HOSPITAL SERVICE,  
*Washington, D. C., August 24, 1892.*

*To Collectors of Customs, Medical Officers of the U. S. Marine-Hospital Service, Agents of Foreign Steamship Lines, Local Quarantine Officers, and others whom it may concern:*

Department circular No. 141, dated August 17, 1892, relative to the disinfection of the personal effects and baggage of immigrants prior to embarkation, is hereby extended to include the baggage and personal effects of immigrants from all European and Asiatic ports; and it is further ordered that the provisions of the circular thus amended shall become operative on and after this date, except for articles of baggage, etc., afloat prior to the promulgation of this order, which must be disinfected on arrival.

H. W. AUSTIN,  
*Surgeon M. H. S., for the Supervising Surgeon-General.*

Approved:

CHARLES FOSTER, *Secretary.*

[Circular.]

VESSELS FROM CHOLERA-INFECTED DISTRICTS TO BE FORBIDDEN ENTRY UNLESS PROVIDED WITH CERTIFICATES OF DISINFECTION.

1892. Department No. 112].

TREASURY DEPARTMENT,  
OFFICE OF SUPERVISING SURGEON-GENERAL  
U. S. MARINE-HOSPITAL SERVICE,  
*Washington, D. C., July 8, 1892.*

*To Collectors of Customs, Medical Officers of the Marine-Hospital Service, and others whom it may concern:*

The act approved April 29, 1878, entitled "An act to prevent the introduction of contagious or infectious diseases into the United States," provides that no vessel coming from any foreign port or country where contagious or infectious disease exists, nor any vessel conveying infected merchandise, shall enter any port of the United States or pass the boundary line between the United States and any foreign country except in such manner as may be prescribed under said act.

Information has been received that cholera prevails in the Caucasus, in eastern European Russia, in Persia, in Calcutta, and on the western littoral of the Red Sea; and in view of the threatening further spread of the disease and because of the danger which attaches to rags, furs, wool, hides, etc., which may have been



gathered in the infected districts, and to articles of personal wear therefrom, it is hereby ordered that no vessel having rags, furs, skins, hair, feathers, boxed or baled clothing or bedding, or any similar article liable to convey infection, hailing from any port in the district aforesaid, and no vessel from any port carrying the above-mentioned merchandise or immigrants from the present infected districts or from districts that shall hereafter be officially declared infected, will be allowed entry to any port in the United States unless provided with either a consular certificate or a certificate from a medical officer of the Marine-Hospital Service or State or local quarantine officer of the United States to the effect that the vessel, cargo, personal effects, etc., have been disinfected in accordance with the methods herewith prescribed.

A. *Disinfection of vessels.*—The disinfection of the vessel must be in accordance with the most efficient quarantine practice and will be by one or more of the following methods:

1. Bichloride of mercury.
2. Sulphurous oxide.
3. Steam heat.

In addition to the above, thorough cleansing, flushing with sea water, etc.

B. *Disinfection of articles of merchandise, personal effects, etc.*—For the disinfection of the articles of merchandise, personal effects, etc., mentioned in the circular one or more of the following methods will be used, all articles to be unbaled:

1. Boiling in water not less than one hour.
2. Exposure to steam not less than one hour, the steam to be of a temperature not greater than 115° C. (239° F.), and unmixed with air.

All bedding and clothing must be subjected to method No. 1 or No. 2.

3. Exposure not less than six hours to sulphurous acid gas, made by burning not less than 3 pounds of roll sulphur to each 1,000 cubic feet of space.

4. Exposure not less than six hours to an atmosphere containing 3 per cent of sulphurous acid gas liberated from its liquid state (liquid sulphur dioxide).

5. Solution of carbolic acid of a 2 per cent strength.

This method (No. 5) may be applied only to leather goods, such as trunks, satchels, boots, shoes; to rubber goods, etc., the articles to be saturated with the solution.

WALTER WYMAN,  
*Supervising Surgeon-General, U. S. M. H. S.*

Approved by direction of the President:

A. B. NETTLETON, *Acting Secretary.*

CONSULAR CERTIFICATES OF DISINFECTION REQUIRED WITH ALL IMPORTATIONS OF RAGS FROM FOREIGN PORTS—ABSOLUTE PROHIBITION OF RAGS FROM DISTRICTS KNOWN TO BE INFECTED WITH CHOLERA.

1892. Department No. 143.]

MARINE-HOSPITAL SERVICE,  
TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,  
*Washington, D. C., August 19, 1892.*

The act approved April 29, 1878, entitled "An act to prevent the introduction of contagious or infectious diseases into the United States," provides that "no vessel coming from any foreign port or country where any contagious or infectious disease exists, nor any vessel conveying infectious merchandise, shall enter any port of the United States or pass the boundary line between the United States and any foreign country, except in such manner as may be prescribed under said act."

It having been shown that an epidemic of cholera prevails in Persia, India, and Russia, and that it has also reached Germany, Austria, and France, and in view of the danger which arises through the importation of rags from cholera-infected districts, and of the difficulty through their reshipment at various ports, of accurately determining the localities in which rags are actually gathered; furthermore, because of the prevalence from time to time in various foreign countries of smallpox, scarlet fever, diphtheria, and other contagious diseases liable to be conveyed by rags, therefore it is hereby ordered that on and after September 20, 1892, rags from any foreign port will be refused entry into the United States unless said rags are accompanied by a certificate from the consular officer at the port of shipment to the effect that they have been disinfected in accordance with the methods herein described.

It is also ordered that rags gathered in or shipped from any port or place where cholera is known to prevail in epidemic form be denied entry to the United States absolutely on and after the date of this circular, except such as were then afloat, which must be disinfected on arrival. All previous Department circulars relative to the importation and disinfection of rags conflicting with the provisions of this circular are hereby amended to conform therewith.

For disinfection one of the following methods will be used:

1. Boiling in water not less than one hour, all rags to be unbaled for this purpose.

2. Exposure to steam not less than one hour, the steam to be of a temperature not less than 100° C. (212° F.), nor greater than 115° C. (239° F.).

3. Exposure not less than six hours to sulphurous acid gas made by burning not less than three pounds of roll sulphur to each 1,000 cubic feet of space.

4. Exposure not less than six hours to an atmosphere containing 3 per cent of sulphurous acid gas liberated from its liquid state (liquid sulphur dioxide).

In methods No. 2, No. 3, and No. 4 the rags must be well scattered upon racks, or so arranged that they can from time to time be turned in such a manner that all shall be exposed to the steam or gas.

O. L. SPAULDING,  
*Acting Secretary.*

We were instructed to proceed with all dispatch to Ghent, Belgium, from which place great quantities of rags are shipped annually to the United States, and afterwards visit the principal ports of the Atlantic in Europe from which immigrants and merchandise were coming, for the purpose of ascertaining what preparations had been made by the steamship companies to comply with the instructions contained in the circulars, and what methods were employed by the exporters of rags to carry out the provisions required for the proper disinfection of their merchandise.

For the purpose of ascertaining the methods then in use, upon which the United States authorities relied to show that the merchandise indicated in the circulars had been properly disinfected before being admitted into the United States, we visited the collector of customs in New York on November 27, 1892, and had a conference with him relative to this subject. We were shown a certificate which had just then come into the collector's office with an invoice of rags shipped from London to New York. This certificate set forth that "Dr. J. Higham Hill had superintended the disinfection of the rags baled and marked as per bill of lading." To this certificate was pinned a yellow label which had been attached at the New York quarantine station by one of the officials, permitting the rags to enter. The health officer's name was stamped on the yellow label, and underneath it was written the name of the officer who boarded the ship. There was nothing either upon the certificate or the label, or upon any other document, to show where the rags had been originally gathered, or whether they had been shipped from the

Continent to England and reshipped from there to the United States. The only certification was that the rags had been disinfected in accordance with the circular issued by the U. S. Treasury Department.

We were informed by the collector that rags were being shipped to New York from foreign ports in large quantities. These facts were reported to you November 29, 1892.

December 7, 1892, in accordance with instructions we sailed from New York.

In perfecting arrangements en route for making the examinations required the information in our possession made it advisable for us, upon our arrival in England, to proceed at once to Manchester, as at that place there are several large exporting firms who receive rags from beyond the seas and rebale them for shipment to the United States. We also prepared a list of places from which rags are exported, which was subsequently amended from time to time as we obtained the data, and which may be inserted here. This list does not give the names of all who are engaged in this business, but contains many of the great exporting houses.

#### RAG EXPORTERS IN GREAT BRITAIN.

Manchester: James Beaumont & Co., William Robinson, G. W. Simpole, Edwin Butterworth & Co., Thomas Griffiths & Co. Liverpool: True & McClelland, Liverpool Paper Stock Company, Thomas Griffiths & Co., Edwin Butterworth & Co. Hull: Young & Sons. Newcastle: Thomas Green, Martin Dempsey. Edinburgh and Leith: Chalmers & Co., Limited; John Barry. Glasgow: Jebb Brothers, William Tait & Co., Thomas Watson. Dundee: J. & W. Smith, Henry Knuck & Co., William Cleghorn, jr. Cardiff: Thomas Jones & Co. Bristol: Harris & Co., F. Clarke & Son. London: A. Cohen & Co., Robert Hough, C. Davidson & Sons, Limited; R. O. Sturgis.

Upon the Continent the principal rag exporters are as follows, although the list is by no means complete, many shippers being located at places which it was impossible for us to visit:

#### RAG EXPORTERS ON THE CONTINENT.

*Belgium.*—Ghent: Theophile Vercoutre, E. Lansenberg & Co., Max Cohn, DeClercq & Co., Alphonse Van der Haeghe, E. Butterworth & Co., Veuve Emile Cabarteux, Alphonse Biebuyck. Antwerp: J. Hastier, J. L. Van Riel. Roulers: C. Van der Haeghe, — Wyckhuysen, Eugene Legein, — Moerman. Arseele: DeClercq, Mesdack & Co., Max Cohn, DeClercq & Co. Wareghem: Alphonse Blondal. Vilvorde: Heymann & Co. Courtrai: H. Berson Jacques.

*France.*—Paris: Chapelle Jeune, Fageol-Cosse, Riberolle, Risser, Sivard. Rouen: J. Vachon, ainé; C. Vachon, Camille Borgers, Vassel, père. Beauvais: Borg & Levy. Bordeaux: Urbain Rabaud, F. Capdevielle, succr. Agen: Rozes, ainé. Carcassonne: F. Farge & Cie. Beaucaire: Abadie & Cie. Marseilles: Griozel, J. Olive, B. Barbier & Cie. Chalon sur Saone: Gabriel Goutte. Dieppe: A. Bourdin. Lille, M. Albert, M. Vincent, Victor Vervaeke.

*Spain.*—Barcelona: F. Farge & Cie, Pansu Hermanos.

*Holland.*—Amsterdam: S. E. Cohen & Co., Geb. Gomperts, Cohen & Mok, Veerman & Zonen. Zutphen: David Spanjer. Almelo: J. J. Polak, Gebr. Polak. Oldenzaal: H. M. Cohen.

*Germany.*—Hamburg: A. Wertheim & Co., H. Bremer. Hanover: Gebr. Salomon, Gebr. Barlsen, J. Jacobson, J. Katzenstein & Son. Bremen: — Wrissenman, — Hagemeyer, — Aschendorf. Berlin: Lewy & Strick, Gustave Emmanuel. Stettin: H. J. Levy, Berthold Levy, and A. Joseph Levy. Königsberg: Lewin Minkowski, Mr. Lewy. Harburg: Gebr. Salomon.

*Denmark.*—Copenhagen: Petersen & Albeck, F. F. Olsen.

*Italy.*—Leghorn: Enrico Grandi, Charles Malencherri, Cerri, Felippi & Co.



*Egypt*.—Alexandria: Leopold Menshausen, E. Butterworth & Co., S. A. Dolinger. Cairo: Isaac Salaama.

*Syria*.—Beyrout: Berouti Freres. Smyrna: Moise Mordoh.

*Turkey*.—Constantinople: — Suter.

It was subsequently found that the firms, generally large concerns, had sub-buyers, managers of small depots for rags, located in all the principal towns and villages of the several countries visited, with whom they are in constant correspondence and from whom the exporters order the rags forwarded. That the subject of rag gathering may be properly understood, and as much will hereafter be said upon this subject, it seems better to commence with a brief description of the *modus operandi*; and for this purpose no better place can be found to furnish the data than the city of Paris, though the methods in use there do not differ materially from those used in other large cities.

From the Bureau du Travail, Place de la Republique, it was ascertained that the ragpickers of Paris have recently formed a syndicate to protect themselves from the extortions of the middlemen in this business; hence a tolerably clear idea of numbers, methods of business, etc., could be ascertained. From this place it was learned that there are in the city of Paris alone between 45,000 and 50,000 people who live by collecting refuse (rags, paper, bones, broken glass, bottles, old iron, old shoes, hats, and other material), exclusive of garbage, and that in France nearly one quarter of a million of people are engaged in the rag business.

The ragpicker proper, called by the officials "*chiffonniers*," and who call themselves "*biffins*," are not now permitted to live within the fortifications of Paris proper, and nearly all have gone outside, although a few may yet be found in the Rue Mouffetard, district of the Gobelins, in the district of Clichy, and in some other poor districts; but they are being gradually forced out of the old quarters to the suburbs selected for them, of which there are several. One of the principal of these, Gennevilliers, sometimes called "*Chiffonville*," we visited. The ragpickers constitute a large proportion of the population. They live in small houses, which are generally surrounded by a high wall inclosing a patch of ground, where the rag sorting is done. They form a social caste, their whole life being devoted to the gathering and disposing of rags, etc., and, curiously enough, in many instances the trade descends from father to son, all being apparently satisfied with the conditions of life about them. It is estimated that about 1,200 tons of rags and other refuse, exclusive of garbage, is collected and sorted every day, and its commercial value is between 70,000 and 75,000 francs.

The city of Paris is divided into arbitrary sections by the "*biffins*," and the business is conducted with some attention to formality, but they make frequent incursions upon a neighbor's domain whenever a good opportunity offers. Nearly all the rag collecting is done between midnight and 8 a. m., for they are not permitted on the streets after 8.30 a. m. On some of the principal streets the "*biffin*" pays for the privilege of collecting rags, etc., the perquisite going to the concierges in each of the several houses or shops along the street.

The refuse from the houses, shops, restaurants, clothing shops, tailoring and millinery establishments, etc., is brought to the street in boxes, just as it is gathered up from the several establishments. The aristocratic ragpicker (for there are grades among them) owns his cart, and being early on the ground sometimes assists the concierge in carrying the boxes from the several "*flats*" to the street, where he spreads a large coarse cloth upon the ground, upon which he empties the contents of the boxes. Scattering them over the surface of the cloth, he selects such articles as he wants, puts them into his cart, and leaves the balance for the municipal street carts, which come later. The "*biffin's*" cart is drawn either by himself or by dogs, which are often used in this business. Some of the more prosperous "*biffins*" run several carts in the wealthier quarters, gathering from

quite an extensive area of territory. Along the streets of the better class, the dust which is swept up in the houses is sifted through a coarse sieve, and anything found of value is saved, even buttons and bits of glass. Whole bottles are washed, and many of them eventually find their way back into the restaurants, drug establishments, etc. The less fortunate ragpickers, and these constitute by far the largest class, start out shortly after midnight or in the very early morning with a large, deep basket strapped to their backs, a sort of policeman's lantern in the left hand, and a stick 2 feet 6 inches long with a curved iron hook at the end. Marching along their "beat," they approach a pile of rubbish on which the light of the lantern is trained. With the hook they pull out every trifle of value to them, and with a rapid, dextrous jerk deposit the article in the basket upon their back, without looking, and which they never miss. Into the basket goes cast-off clothing and underwear, rags of all kinds, many of the filthiest description, some having been used for the foulest purposes, old mop cloths, bandages soiled with blood and pus, old poultices, and even the contents of cuspidors (for the "biffin" gathers cigar stubs and cigarette butts, and he finds a ready market for them), scraps of food, bacon rinds, in fact the entire offscouring of the houses on his "beat," together with the mass of clippings (new cuttings) which come from the overcrowded and ill-conditioned ready-made clothing factories, and the odds and ends from the tailoring and millinery shops of all grades. All this refuse finds lodgment in cart or basket, which, when full, is lugged away to the suburbs, 7 or 8 miles distant.

In his round the ragpicker stops before every house or inhabited building to gather the refuse. Up boulevards, into aristocratic quarters, streets and alleys, around the palace and the hovel, wherever there is a discarded bit of cloth, a scrap of paper, a rag, a bone, or a morsel he can utilize; before the houses of the well or the sick, no matter what disease there is within, whether smallpox, scarlet fever, diphtheria, or other contagious diseases; articles from all these places which have been rejected for any reason go into the ragpicker's basket. While it is forbidden by municipal regulation to sell or give away clothing, cloths, bandages, etc., which have been used for hospital purposes, and which it is provided shall be burned, we ascertained that the thrifty janitors attached to the Paris hospitals generally dispose of all this material to the "biffin," who pays something for them. Hospital cloths and bandages are generally new, and are regarded as a superior quality of rags, commanding higher prices in the market. As his visits are made in the early morning, often before daylight, the transaction is effected and the "biffin" away before anyone knows of the trade. The material having been collected, the "chiffoniers" return to their homes in the suburbs and deposit their merchandise inside the stone walls, where the women and children begin the process of sorting. After the ragpicker has done his work on the streets, the municipal carts gather up the balance of the refuse, and it is drawn out to the suburbs, where the ragpickers live, and there dumped in huge piles. Later in the day little children sit around these piles and pull over every atom, saving all that may have been overlooked by the ragpicker in the early morning. Subsequently these piles of refuse are sold. The women and children sort out the material brought by the men soon after it arrives.

Desiring to see the whole process of rag collecting and sorting, we went to Gennevilliers, situated about 8 miles from the center of Paris, and quite in the country, but connected with Paris by a street railway, while the process of sorting was going on. This place, inhabited by about 400 souls, nearly all ragpickers, presents a busy scene in the earlier hours of the day. The male portion of the community sleep during a part of the day, as they are obliged to leave the suburb for Paris at midnight, and are actively engaged in all quarters of the city during the night. They return to the suburb about 8:30 a. m. The proceeds of the night's work is deposited in the inclosure and the "biffin" retires. If he has

a family of children, and many of them have, the children assort the rags during the day, according to their commercial value, into "linens," "whites," which are subdivided into several grades, "colored" rags, "new cuttings," "woolens," and old "bagging," all mixed together until the sorting takes place. In the afternoon the assorted piles are put into sacks and taken to the local merchant, who pays cash for them, and the picker returns home to prepare for the next night's work.

In his rounds the "biffin" leaves nothing which has the slightest value. Old shoes and hats are cleaned and sometimes find their way back into second-class sales shops. Bits of metal, cinders, waste paper, are collected and assorted, each having its own value.

At Gennevilliers everything one sees and hears relates to rags and refuse, and the evidences of this unclean business are to be seen everywhere; the very air is filled with the odor of rags. The inhabitants of this strange village talk freely of their business and of the rag syndicate, which they expect will better their lot by relieving them from the rapacity of the local dealer, the middleman, who forever grinds the face of the poor by beating down prices. Through the syndicate they hope to be able to deal directly with the exporters or manufacturers, taking the middleman's profit to themselves. The men take great interest in local politics, and boast that by their vote they can return "their man" to the Chamber of Deputies. Since they have been compelled to move into the suburbs many of them add to their income by raising chickens and pigs. We were informed that the "prosperous" ragpicker earns from 25 to 30 francs a week, but this sum is far in excess of the average, which is not much more than one-half that, or \$3 per week, and they must work steadily to secure this income.

Taking the daily value of the stuff gathered at 72,000 francs and dividing it by the number of pickers in the city, the result to each would be less than 2 francs (38 cents) a day. The children are put to work sorting almost as soon as they are old enough to know the difference between a bone and a rag. We saw many little toddlers sitting around the huge piles raking out the bones and shreds, which for many of them is to constitute the labor of life. These people have their own views of life and of the relations they sustain toward society about them; they take quite an active interest in questions relating to the affairs of France, and are generally sober and industrious; it is an *imperium in imperio*; a little world subsisting upon the refuse swept out of the greater world around them. They have their traditions, folklore, and songs, and as we walked away from the place we heard several young girls from 8 to 12 years old singing a ragpickers' song, the refrain of which was "We are the ragpickers' daughters."

After having visited and inspected the work done in the suburbs, we next went to the local merchant, or middleman. He is also required to carry on his business outside the city of Paris proper; but he gets as close as possible, and many of these merchants are now established along the Boulevard Victor Hugo, immediately under the stone walls of the fortifications. To these merchants, some of whom operate extensively, handling thousands of bales of rags yearly, the "biffin" brings his daily collection, where they are weighed, valued, and paid for. They are then sent upstairs, where they are once more sorted, the linen rags being separated from the cotton and the best white from the poor white, then the common colored from the woolen rags. The "new cuttings" are glanced at, to see that all old rags have been picked out, to make them appear clean. The local merchant buys the old shoes, hats, bones, metal, etc. The stench arising from the putrefying bone piles is simply abominable, and it is strange that the authorities permit such accumulations in a populous street. After the rags are sorted by the middleman they are put into more compact bales for sale to exporters or mills, or where they can find the highest market price. There appear to be no regulations requiring disinfection, and the trade between ragpicker and exporter is under no other supervision



than that which is applied to any other business, no special restrictions being placed upon it; or if there are restrictions or regulations they are not enforced.

There is no disinfection; there are no disinfecting rooms nor anything that could be used as such; there is no pretense that it is done, and when the subject of disinfection was mentioned it was regarded by all of our informants as a curious proceeding of which they knew nothing. If there are French laws, either general or municipal, or police regulations requiring the disinfection of rags, the dealers know nothing of them, for we closely questioned several of them while examining their places, and from all received the same replies, that there were no such regulations. This would seem to be the truth, for the wide-open doors through which loaded carts come and go would make inspection easy if demanded, and there was no evidence of concealment.

Here, then, we saw the whole business of rag collecting, from the gutter until the rag found its way into the exporter's hands. We saw the "new cuttings" selected from indescribably filthy piles of rags baled and sent to the United States, where they are admitted under special instructions issued by the Treasury Department, which exempts them from disinfection. Under the trade classification of "new cuttings" they have apparently been regarded as clean, and therefore harmless. The larger exporting establishments have rooms which might be used for disinfecting, but they are operated for other and more profitable purposes.

Foul as are the rags and the rag business in Paris, it is by contrast clean with what we saw in other places, especially Ghent, Rotterdam, Amsterdam, Vilvorde, Hanover, etc. In some of these cities the fetid odors arising from the sweating piles of rags were horribly offensive. Exposed to the rain, mixed with putrefying bones (the latter being imported by shiploads into the United States without disinfection), and contaminated with filth of every description, they are sorted and baled in a manner to be hereafter described.

At Amsterdam, in one of the largest exporting establishments, there were tons of rags and bones mixed in a common pile, which gave forth such a stench that we were driven from the place. We afterwards saw the health officials and called their attention to this condition of affairs, and upon examination they reported that they had no idea matters were so bad. At Vilvorde there is another large exporting establishment as malodorous as the Amsterdam house. We saw but four or five of the establishments visited that were conducted in what might be called a proper manner—that is, having regard to the health of those employed in the place—and even in those the rags were filthy. They can not be otherwise, for these large establishments are the receptacles for the accumulation of rags gathered from all the cities and villages on the Continent. Clothing is often worn as long as it will hold together by many not overzealous in keeping themselves clean, every shred made to do duty somewhere, descending lower and lower in the scale of utility until no longer of use for any purpose; or clothing discarded because it has been worn by those dead of some contagious disease finds its way into the rag house, where it is finally baled for exportation, much of the filthy stuff contaminated by disease germs finding its way into the United States without either fumigation or disinfection.

Having described the usual methods of collecting rags in the cities, and in what condition they reach the exporting houses, we are better prepared to understand the necessity for disinfection.

We arrived in Liverpool at 10 a. m. December 14, 1892, and took the 11 a. m. train the same day for Manchester, where we called upon U. S. Consul W. F. Grinnell, and then visited and inspected the rag warehouse of E. Butterworth & Co., one of the largest exporting establishments in Manchester. We were accompanied by Mr. Arthur C. Hall, who inspects the disinfection of rags at this place, being appointed to do this work by the consul. Mr. Hall is employed regu-

larly at the consul's office and has many duties, so that he can not devote the time necessary to watch the proper disinfection of rags. We reached the Butterworth establishment at about 6 p. m., and saw the rags spread on the racks in the fumigating room. This room is about 31 feet 6 inches by 28 feet, and 9 feet high. On three sides are heavy brick walls, the other wall being formed by a board partition. About 2 feet 6 inches from the floor there is a rack covering the entire space of the room. Four feet above the first rack is a second. The rags are let down from a sorting room above through trapdoors, and are spread from 9 to 10 inches deep, first on the lower rack, then on the upper. When both racks are covered, which generally takes all day, or until about 6 p. m., Mr. Hall visits the disinfecting room, weighs the sulphur (35 to 40 pounds), lights it, and then closes the door, which is supposed to remain closed all night. The sulphurous fumes soon fill the room, so that it is impossible to remain inside. We inspected the rags on the racks, and found them to be as stated above, about 9 inches deep. The sulphur was ignited and the door sealed. Over this room is a second, where precisely the same process is carried on. We arranged to visit the establishment the next morning, and went to the hotel at 8 p. m. In the morning we returned to this establishment and saw the room opened which had been closed in our presence the night before. It was impossible to enter the door or stay near it, owing to the escape of the fumes. The door was then closed and the vents opened to permit the escape of the gas. We went to the upper floor, which had been opened and ventilated earlier in the morning, and from which the disinfected rags were then being removed. We opened the rags which had been spread on the racks in several places and found the fumes in the rags were too pungent to permit one to inhale, showing that the gas had permeated the whole mass. The rags are supposed to remain on the racks in the fumes all night. The vents are opened at 6, and the girls who handle the rags enter the rooms at 8 a. m., clearing the racks for another charge, sending the disinfected rags downstairs, where they are pressed into bales weighing from 700 to 800 pounds. After being baled, Mr. Hall, the inspector, marks on each bale with stencil plate the word "Disinfected," and "Arthur C. Hall."

We were informed that the rags now handled by this firm are gathered in England, local laws prohibiting the importation of rags from countries infected with cholera, whether they have been previously disinfected or not. We learned that the fees paid by Butterworth & Co. for inspecting the disinfection, etc., are 3 shillings sterling per ton. They disinfect now about 8 tons in twenty-four hours, and Mr. Butterworth told us that the total cost of handling and disinfecting rags is about 15 shillings sterling per ton. That is to say, the extra cost to the exporter for disinfection, including fees and all other expenses incidental to the process, is 15 shillings per ton. So that where rags are not disinfected they can be put upon the market at 15 shillings per ton less than those which have been properly disinfected, offering an inducement to unscrupulous dealers to omit disinfection altogether or to do it quickly and improperly.

Learning that the Butterworth Company had another establishment at Liverpool, it was considered best to make an examination of that place before proceeding to Ghent. Accordingly, Dr. Irwin went to Liverpool at 11:30 a. m., December 15. He found that the arrangements for disinfecting there were practically the same as at Manchester, but much more complete and the methods better carried out. At Liverpool the U. S. consul, Mr. Thomas H. Sherman, employs three inspectors, who devote their entire time to superintending the process of disinfection and marking. They are present at every stage of the process, watching each step from the reception of the rags into the disinfecting room until they are baled and branded for exportation. The stencil plate is always in the possession of one of the inspectors, and when not in use it is locked up. This is not the case at Manchester, where it is left in the office of the firm during the time that Mr. Hall

is absent. The area of the disinfecting rooms at Liverpool enables them to properly disinfect and pack 7 bales (about 2 tons) per hour. Any excess of this quantity shows that the work has been slighted and improperly done. Our examination at these places indicates that it is better to have an inspector regularly employed at Manchester the same as at Liverpool, the size of the establishments at Manchester making this plan seem the best to secure the proper disinfection of rags, required by Department circular No. 143. It would demand the entire time of at least one man thus employed; and as much of the work necessitates hard labor and is not essentially "scientific," a man of ordinary business capacity could do the work, and would probably do it better than a physician or other skilled person. And we so recommended in our first preliminary report, dated December 21, 1892. In addition to the Butterworths there are at Manchester the following-named dealers in rags: James Beaumont & Co., William Robinson, G. W. Simpole, and Thomas Griffiths & Co.

We learned that most of the dealers here and elsewhere in England are in communication with dealers in Ghent, and as we desired to visit that place unannounced we deferred going to any other establishments until after we should return from the Continent. At the Butterworth place there are 400 girls employed as rag sorters and elsewhere about the establishment. We were told that they had never had a case of anthrax or other disease consequent upon their occupation, and the girls we saw all seemed to be healthy, sturdy people. The rags were moist, and we were told that they were always moist at this season of the year. They took no pains to dampen them or to moisten the walls of the disinfecting room. When this was suggested as making the disinfection more effective, they said that they preferred dry rags, because after baling they were weighed, and during long voyages the rags dried out and lost weight, which fact was sometimes taken to mean, they said, that they had marked the original bale as weighing more than it really did.

Relative to arrangements made by the steamship companies at Liverpool to carry out the provisions of Department circular, requiring the disinfection of personal baggage of immigrants at ports of debarkation, and to ascertain what had been done by them to prevent the introduction of contagious diseases into the United States, we found that the steamship companies at Liverpool have no adequate arrangements for disinfecting baggage should this step become necessary, and, in our judgment, much of it should be disinfected at all times. We were informed that they have an arrangement with a local hospital where small quantities of baggage may be disinfected by steam, but as the apparatus was built to disinfect articles of bedding or clothing belonging to the hospital only, and as it is situated at some distance from the wharves, it may not be at all times available for use by the steamship companies, and it is altogether too small to disinfect the large quantities of baggage arriving at this port. At the best of times the bedding and clothing brought to the ships by emigrants are often filthy, and no one knows how recently some virulent contagion may have contaminated it. It is a well-known fact that infected bedding is especially liable to convey disease germs, and as smallpox is always present in some parts of the world from which we constantly receive immigrants, it would seem to be a matter of justice to the people of the United States that the introduction of bedding should be prevented, or that it should always be thoroughly disinfected before it is put on board ship.

This is a precautionary measure which can not fail to result in good.

We found that the boarding houses where emigrants congregate previous to sailing are under the control of the principal steamship lines. Their agents receive the emigrants at the several railway stations and steamship landings, and conduct them to the boarding houses. They regulate the daily charge for board and lodging, which is very moderate, and they cause them to be inspected by surgeons in their



employ, while they remain therein. The boarding houses are licensed according to local regulations, and are supervised by the local authorities, as well as by the steamship companies' officers.

The steamship companies are notified by their subagents in the several countries from which the emigrants come of the sale of the tickets, to whom they are sold, and for what steamship, and they are thus enabled to know the name and from whence each passenger comes, excepting those whose tickets are purchased in the United States, technically called "prepaids," to whom the tickets are sent from the United States. This prepaid passenger comes to the boarding house or steamship office in Liverpool unheralded, not having applied to any European subagent, and must be cared for accordingly. To facilitate the business of inspecting the emigrants as they go on board ship, each one is provided with a ticket, on which is written the name and place of residence, which must be shown as they go on the vessel. If any intending emigrant manifests symptoms of infectious or contagious disease while at the boarding house, or at any time before the ship sails, the person is at once removed to a local hospital for treatment at the ship's expense.

The great majority of emigrants (and they number from 40,000 to 50,000 a year) arrive in Liverpool the day before the ship sails, hence anything like proper inspection is impracticable. The boarding houses are generally clean and well ventilated, the food well cooked and sufficient in quantity, and the accommodations suitable.

Returning to Manchester after the examination at Liverpool, we took the morning train, December 16, for London, and on the morning of the 18th left for Ghent, reaching that place at 7.30 p. m. Next morning we went to see the resident agent of the Butterworths, of Manchester, England, who have another large warehouse at this place. He conducted us through a brick building, formerly a cotton spinning mill. The rags are taken to the top floor, sorted, and dropped from floor to floor into appropriate bins; in the second story is the fumigating room, containing 10,000 cubic feet, in which the superintendent stated that he burned about 27 kilograms of roll sulphur at one time. Through this room there is a passage 3 feet wide, and on each side of the passage are four tiers of racks, the lowest being about 2 feet from the floor, the others about 18 inches above each other. The racks are made of coarse wooden frames, to which is nailed wire netting; the racks are about 6 feet long by 3 feet wide and so arranged that they slide into their resting places. On the wire screens the rags are placed about 9 inches deep, the sulphur is put into several iron pots and set on fire, the room closed tightly, and the rags left in the fumes all night, being removed the next morning. In this room they fumigate about 8 tons of rags at one time. There was a suspicious newness about this disinfecting room, and an entire absence of the odor of sulphurous acid gas, which indicated to us that no sulphur had been recently burned in it; and the boards which had been used to separate this room from the other part were of new lumber, the hammer dents about the nails betraying its very recent construction, while the wire used for the racks was clean and bright, and had never been "bitten" by acid gas. The iron pots in which the roll sulphur stood were not incrustated and did not appear to have been used for the purpose of burning sulphur. Along one side of the fumigating room was a series of bins the height of the room and divided into compartments about 5 feet wide, into which the rags came through openings in the floor overhead; these bins were old, as evidenced by the dust, spiderwebs, and detritus of the establishment, and were in sharp contrast with the newness of the other side of the fumigating room. Afterwards, while in conversation with the American consul, he told us that the Butterworths "disinfected their rags on the floor, this method being said by the inspecting physician to be just as good as though they were fumigated on the racks."

The superintendent informed us that all the rags in this establishment were collected in Belgium, France, and Germany. They are, as a matter of fact, gathered in the small places all over the Continent by local ragpickers and forwarded to exporting establishments by small dealers, packed in what are technically called "loose bales"—that is, unpressed bales or large sacks. They are readily distinguished from bales prepared for export, which are subjected to great pressure and firmly bound by iron hoops. He answered the specific question, "Do you buy rags from Germany now?" by saying, "Yes; the Belgian Government does not interdict them now." This disinfecting room had not been made air-tight; the window sashes were loose in their frames, and there were many broken panes of glass; the cracks between the boards were quite wide, so that we could plainly see through them. All the evidence forced us to the conclusion that this room had never been used for disinfecting purposes as at present arranged, and if sulphur had ever been burned in it the fumes must have escaped immediately through the many large openings. The immense size of this establishment, which was filled with rags on each of the five floors, and the large quantities which were being unloaded from cars which ran up to the warehouse on a spur from the main line of railroad, and were being hoisted into the building, made the small size of this disinfecting room appear ridiculously small. It requires at least 8 by 7 feet on the racks to disinfect one bale of rags. According to this standard it would require more than four times this space to disinfect the rags which they admit is their weekly output, and the superintendent said they were not now fumigating as many rags as formerly. It was apparent that disinfecting was not properly done in this establishment. We went into the basement of the building, where the rags were being baled by hydraulic pressure, and saw an immense number of bales ready for exportation. They were not marked in any way to denote that they had been disinfected.

The superintendent pointed out a large pile which he said was ready to go back to "your country," the contents being old bagging which had been used to bring cotton from the United States, and had been gathered from many cotton spinning establishments in Belgium and Germany. The superintendent said that they had not been disinfected because it was not required by the United States regulations. He also informed us that the company employed a physician of their own choice who superintended the disinfection and that he was paid by the company; he also said that they paid the U. S. consul 5 cents a bale for his certificate of disinfection. In response to our question he said that they employed about 60 girls as sorters, and that none of them had ever been sick or had "sore fingers." Asked whether he knew that rags from hospitals came into the establishment, he replied, "Oh, yes, we can always tell them, because the bandages are new, and the cloths always smell of carbolic acid and there are old poultices among the rags."

We next called upon Mr. John B. Osborn, the U. S. consul at Ghent, and informed him of the object of our visit. He told us in substance that the exporting establishments nominated their own inspecting physicians, and that he approved them. The inspectors in his district were as follows: Dr. Pagaldino, inspector for Van der Haeghe and Butterworth & Co.; Dr. L. Colson, inspector for E. Lansingbergh & Co.; Mr. St. Reynart, burgomaster at Arseele, inspector for Max Cohn & Co.; Dr. Emil Carlier at Roulers, inspector for C. Van der Haeghe; Mr. J. Walleart, at Courtrai, inspector for T. H. Vercoutre.

These persons he said were nominated by the firms, and he confirmed the nominations; that they were paid by the rag exporters and received 5 francs per visit; they visited as often as they were sent for. He said his own fee for certification was 5 cents a bale and \$2.50 for a "certificate of origin." He informed us that "the firms pretty generally disinfected now, but that some disinfection was done on the floor, for the doctors said that the fumigation was just as good that way as

on racks;" he said he did not often visit the rag establishments, some he had never visited; that he had sent copies of all his certificates to the State Department at Washington, and that they had been approved by the Department. That some time in June last he sent out a circular letter to all shippers in his department calling their attention to the requirements of the circular from the Treasury Department relative to the disinfection of rags from Ghent, but that he had not personally visited the establishments to see that Department requirements had been carried out, accepting the certificates of the inspectors as satisfactory evidence that the requirements were carried out. He said he thought there ought to be some uniform method adopted by the U. S. Government which should apply everywhere and not leave the subject of disinfection to the determination of each U. S. consul, as was the case at present.

At 5 o'clock we drove to the establishment of E. Lansingbergh & Co. and requested permission to visit the disinfecting room; we took with us a letter from Consul Osborn requesting that we might be permitted to do so. We were met very politely by Mr. Lansingbergh, who said: "My employés have all gone home for the day; the disinfecting room is very dark and really you could not see anything until morning, when I will show you the whole establishment." We plead short time and pressing duties, and that all we desired to see was the disinfecting room, but he replied very politely that it was "really too dark to see anything," and that they were "not fumigating to-night any way," and "to-morrow you can come and see everything, even see the sulphur lighted if you wish to."

The next morning we visited the establishment, Mr. Lansingbergh conducting us at once to his fumigating room, a brick building 42 feet by 26 and 24 feet from the floor to the peak of the roof; about 6 feet above the floor was a wooden rack made of strips of pine boards about 2 inches wide with about 1 inch space between the edges; on the floor and on the rack the rags were spread about 2 feet deep, and we were told that all arrangements were complete for fumigation. In an iron pot was about 4 pounds of roll sulphur, "the amount usually burned in this room;" there was no evidence of any kind that sulphur had been recently burned in the room. There was an opening in the rear brick wall at least 7 feet high by 6 feet wide which led into another part of this enormous establishment, and in it there were several tons of hoop iron upon which we clambered to look through and beyond into the other part of the warehouse. Everything about the room indicated that the arrangements for disinfection had been prepared for inspection since our interview with Mr. Lansingbergh the previous evening. Mr. Lansingbergh said that he could disinfect from 10 to 15 tons of rags at one time in this room, that this was the only room he used, that his annual output was about 12,000 tons, and that most of them went to the United States.

Taking his highest estimate for disinfecting as 15 tons, which he said was done once in twenty-four hours, and allowing thirty days to a month and twelve months to the year, it would on his own showing result in disinfecting only 5,400 tons per annum, if properly disinfected, which it was impossible to do in this room. Every indication, however, pointed to the conclusion that no disinfection is attempted here at this time, and that the whole matter, as we saw it, was a transparent sham, so thinly veiled as to be insulting to ordinary intelligence and was a clumsy attempt at deception. This is one of the largest establishments in the world, and the immense warehouses filled with bales awaiting shipment showed the extensive business carried on in this place. As at the Butterworth establishment, the railway runs a spur track up to and around the building, and at the date of our visit several cars were being unloaded, the loose bales going into the sorting rooms; the bales already packed and awaiting shipment filled numerous warehouses in the immediate locality. They were not marked in any way to show that they had been disinfected, being stenciled "Belgium," and having the



shipper's special mark on them. Mr. Lansingbergh told us that they were all going to the United States and most of them to Boston.

At another smaller establishment to be mentioned later we were told "that Mr. Lansingbergh disinfected the rags from that establishment in his disinfecting room."

After a thorough examination of this establishment we were forced to the opinion that it was a remarkable proceeding for a responsible firm carrying on such an enormous business to attempt such an imposition as they had here. We noticed, as at the Butterworth place, that there were gas pendants in the disinfecting room and that at one of them the gas was burning, but, as above remarked, we had been told on the previous evening that the room was so dark that we could not then inspect it, and this was the special reason given for not admitting us to the room that night. In the office at this place we were shown a proclamation of the British Board of Trade. It stated among other things that on and after August 18, 1892, no rags from Norway, Sweden, Denmark, Russia, or Germany would be permitted to enter Great Britain, but that they might be landed for transshipment to other countries under regulations prescribed by the board of trade, to be quoted later.

Mr. Lansingbergh was especially emphatic in the opinion that disease germs could not be transported in rags, and said in corroboration of his opinion that none of their operatives had ever contracted disease from handling rags, and that, so far as cholera or smallpox is concerned, it would be impossible in any event for them to convey disease, because the regulations of every country required all such rags to be burned at once; then, said he, "clothing from cholera-infected households is washed and used for years by the poor before they finally come to the warehouse."

After finishing the inspection at Mr. Lansingbergh's we went to the establishment of Mr. Alphonse Van der Haeghe. At this place we were not permitted to enter the office, the proprietor coming out upon the street in front, asking us what we wanted to see. After some consideration he said that he was just going to the bank, and asked us to call again at 3 o'clock (it was now about 11 o'clock). At 3 p. m. we returned and were escorted into his establishment. He told us that he had seen the U. S. consul since our first visit, and had been told by him that our visit was all right, and that he had better admit us. He took us at once to what he called "the fumigating room," which had been filled with rags, both baled and unbaled, and the sulphur already ignited. With handkerchiefs over our nostrils we ran into the room and looked about as long as we were able to stay in, which was long enough to show that numerous large panes of glass were broken out of the window sash through which the fumes escaped. They also found exit through the loosely tiled roof, through an entrance into a large chimney or ventilating shaft. From the outside of the building it looked as though the inside was on fire, so rapidly did the fumes escape. The building used for fumigation was 60 feet long by 20 feet wide and about 24 feet high. In the room there was one tier of racks made of strips of wood and poles about 10 feet from the floor. On this rack there were loose rags piled up from 20 inches to 3 feet high. On the floor beneath there were a good many bales, as well as loose rags almost filling the entire space under the rack. In response to inquiries, Mr. Van der Haeghe said, "I put about three tons of rags in this room at a time and fumigate every day and all day, leaving the rags on the rack about three hours, sometimes a little longer." He was asked whether the men carried the rags into the fumigating room while the sulphur was burning. He replied, "No; I let the fire out overnight." To close this "fumigating room" a "door" was lifted into place. This "door" was made of old boards recently nailed together, full of cracks so wide that we could plainly see through them into the interior. In the

iron pot there was but a handful of sulphur on the charcoal. In short, the deception which this man attempted to practice was shameful, the whole room having evidently been arranged in haste during our absence, between 11 and 3 o'clock. Mr. Van der Haeghe is one of the large exporters of Ghent, and the statement that he disinfected "three tons of rags at one time" in a building having a capacity of more than 28,000 cubic feet is more ridiculous than the 15 tons mentioned by Mr. Lansingbergh as his daily output from the disinfecting room. At this place also there were spur tracks from the railway running into and about the works; large numbers of bales were being shipped away and others (loose bales) were being hoisted into the sorting rooms. The rags were very foul and dirty, and the interior of the establishment did not have the fairly decent appearance noticed at the others.

We went to the office of Mr. Theophile Vercoetere. This gentleman informed us that he packed no rags in Ghent; that he acted as a commission agent for rags packed and disinfected at Courtrai.

We then went to see the establishment of *Veuve Emile Cabarteux*, who is carrying on the exporting business established by her late husband. In reply to our questions she said that all the rags packed for exportation by her were fumigated at the establishment of Mr. E. Lansingbergh, above described, that she had no fumigating rooms at her own place, and that Mr. Lansingbergh did this for her because "it was all in the family." She said that she packed and exported rags direct to the United States; that Mr. Lansingbergh employed a physician who inspected the disinfection; that she had nothing to do with that matter and knew nothing about it.

From here we went to see the warehouse of Mr. Max Cohn, another large exporter. He met us very cordially, said he had heard that we were coming, and desired us to visit his place, which is at Arseele, some distance from this city, and he insisted upon accompanying us on Thursday morning. In conversation with Mr. Cohn he declared, as all other dealers here have done with whom we have conversed, that rags do not carry contagion, and that he had never known of a case of contagious disease communicated to any one of his 200 employes during the twenty years he had been in the business. Mr. Cohn showed us a duplicate of an invoice of rags which had been shipped to a Boston firm from Ghent via London in accordance with the regulations prescribed by the British board of trade above referred to, corroborating the statement which had been made to us that rags were shipped from Ghent direct to the United States by way of London, provided they were not permitted to remain on the docks of that city for more than seventy-two hours. He also showed us a letter just received from a party in Boston, who imports many rags, in which the writer states that "rags have been shipped to the United States in violation of our quarantine regulations, and that while the method is risky the profits are so large that he (the writer) was almost tempted to try it, but if caught, and the rags shut out, the losses would more than counterbalance the profits."

In the evening the U. S. consul, Mr. J. B. Osborn, called upon us and during the conversation which ensued he told us that he had had trouble with some of the shippers from Ghent, who had tried to avoid the United States regulations by having their certificates legitimized at some other consulate; that he had known that rags were shipped from Ghent to the United States via London in violation of the United States regulations, and that he had reported the circumstances to the State Department. He also said that on December 1, 1892, the order forbidding rags to enter Belgium from France was rescinded and at this time there was no prohibition upon them. He said that the bagging used to ship cotton goods from the manufacturing districts of France and Belgium, and which finally found its way into the rag warehouses here and was packed for shipment to the



United States, was, in his judgment, as liable to carry contagion as the rags themselves, and should be as thoroughly disinfected. He informed us that smallpox was a very frequent disease in Ghent and often became epidemic; that a recent outbreak was traced directly to the rags brought from France, but that when the attention of the communal authorities was called to it they ignored the matter. He informed us also that the exportation of rabbit skins is quite large. They are brought to Ghent from the country round about and sent to the hat makers in New York. He said that recently a propaganda had been established by the rag dealers and that a printed form had been sent to every exporter in his consular district asking them to fill out the blank and return, as they intend to publish a pamphlet, which it is said will show that no contagious disease has ever been carried by rags, and that by means of the pamphlet the exporters hope to induce the United States authorities to remove the present restrictions.

Relative to the existence of smallpox in Ghent, Mr. Osborn gave us some important information. He said that it was very common; that he had known of several outbreaks in the city since his residence here. In April last (1892) there were over 100 cases in the city, and that the outbreak occurred among the workmen at the docks, who had been employed in unloading rags which had come from France, where smallpox was prevalent. From these working people it spread to other parts of the city; that a large part of those very rags were rebaled and shipped directly to the United States without disinfection; that most of the enormous quantity of rags received in Ghent were shipped to the United States. The epidemic above referred to lasted for some months. In June of 1892 the epidemic continued, and there had been since the winter previous several hundred cases of smallpox. It is impossible to obtain exact statistical information from the authorities, who try to prevent the truth from being known. One of the prominent newspapers of Ghent, the *Journal de Gand*, in its issue of March 6, 1892, contained an article which said that "toward the end of the month (February) some cases of smallpox occurred among the workmen employed in unloading rags;" that "a previous outbreak of the disease was known to have resulted from the same cause, appearing at first only in that quarter of the city in which the people lived who unloaded and handled the rags upon the docks."

Mr. Osborn said that one of the rag exporters, who is also the chief official of the local health department, made an affidavit before him (Mr. Osborn) to the effect that all measures were being taken to prevent the spread of the epidemic. Said he: "I do not wish to contradict the gentleman, but I must say that health officers in the United States would not consider of any value the so-called methods employed here to stop the epidemic." He added that, notwithstanding all the rag exporters say about rags never conveying contagion, it is a matter of common knowledge among the citizens of Ghent that the frequent epidemics of smallpox here first appear almost invariably in the quarter of the town where the people live who handle the rags, and that from this center it spreads in other directions. This fact is so well known, said he, that there is a decided prejudice among many people against permitting the rag exporters to continue doing their business within the city limits. He stated that he had sent to the State Department several dispatches embodying the foregoing facts. That the facts were understood and provisions made to guard against the introduction of smallpox into the United States is apparent from the following letter:

TREASURY DEPARTMENT,  
*Washington, July 2, 1892.*

SIR: I am in receipt of your letter of the 29th ultimo requesting that the U. S. consul at Ghent be advised to let further shipment of rags from Ghent come forward without the disinfection which is required by the circular letter of this Department of May 12, 1892. In reply I have to inclose a copy of the Weekly



Abstract of Sanitary Reports, July 1, issued by the Marine-Hospital Bureau, in which is a communication from the consul at Ghent showing that the epidemic of smallpox at Ghent was caused by foreign rags received at that port. It is evident that the foreign rags received at Ghent are rebaled there for shipment to this country.

It was not the intent of the circular of May 12 to limit the disinfection of rags to the period during which smallpox might prevail at Ghent. On the contrary, said disinfection is a permanent requirement similar to that imposed at the port of Marseilles.

Respectfully, yours,

CHAS. FOSTER,  
*Secretary.*

Mr. LEON GOTTEHEIL,  
53 Beaver Street, New York.

The annual exportation of rags from Ghent is very large, and the amount of money invested in the business in this vicinity makes it a matter of great importance to the town.

#### CHOLERA.

Mr. Osborn informed us that there were 35 cases of cholera in Ghent and 24 deaths during the summer of 1892. It was confined exclusively to the lowest class of people, and was probably introduced here from Antwerp by a canal boatman, whose wife and child were the first persons affected by the disease, and both of whom died. He said that it was the general opinion of the citizens that cholera would occur in Ghent during the coming summer, as the authorities had taken no adequate means to prepare for or prevent an epidemic; that certain classes of the poorer people lived in an indescribably filthy condition at all times, and no authoritative action had yet been taken to make them "clean up." They would not do this themselves, but would continue in their filthy state unless the officials compelled them to clean themselves and their premises. Said he: "The streets look clean, but the contents of the cesspools, which are numerous throughout the city, are emptied into the sluggish canals, making them extremely foul, and they often give out an offensive odor."

The following are the blank forms used at this consulate relative to the disinfection and shipping of rags:

#### AFFIDAVIT OF ORIGIN.

I, \_\_\_\_\_, of \_\_\_\_\_, do solemnly and freely make oath that the \_\_\_\_\_ bales of \_\_\_\_\_ marked \_\_\_\_\_, mentioned and described in consular invoice No. \_\_\_\_\_, and about to be shipped \_\_\_\_\_ to the port of \_\_\_\_\_, in the United States, were packed and otherwise prepared for shipment at \_\_\_\_\_, in the consular district of Ghent, and were neither gathered nor baled at, nor passed through, nor shipped from, any port or place, or any region contiguous thereto, infected with cholera, smallpox, or other infectious disease; and furthermore, that each and every bale of the said shipment is, to the best of \_\_\_\_\_ knowledge and belief, free from any possibility of infection.

Ghent, \_\_\_\_\_, 189 .

UNITED STATES CONSULATE AT GHENT.

Sworn to before me, John B. Osborn, consul of the United States at Ghent, this \_\_\_\_\_ day of \_\_\_\_\_, 189 .

\_\_\_\_\_,  
*Consul of the United States.*

## CERTIFICATE OF INSPECTION.

I, the undersigned, ———, of ———, certify by these presents that I have personally inspected the ——— bales of ——— marked as follows: ———, forwarded by ——— to ———, and I certify that the aforesaid ——— have been well spread upon racks or arranged in such a manner that all have been exposed during at least six hours to sulphurous acid gas, made by burning at least 3 pounds (1.36 kilograms) of roll sulphur for each 1,000 cubic feet (2,832 cubic meters) of space. In consequence, I declare that the aforesaid have been perfectly disinfected according to the method No. 3 prescribed by the circular of the U. S. Treasury of the 19th of August, 1892.

Done at ——— this ——— day of ———, 189 .

—————,  
*Inspector.*

UNITED STATES CONSULATE AT GHENT.

Accepted this ——— day of ———, 189 .

—————,  
*Consul of the United States.*

## ORIGINAL CERTIFICATE OF DISINFECTION.

CONSULATE OF THE UNITED STATES OF AMERICA AT GHENT.

I, John B. Osborn, consul of the United States of America at Ghent, do hereby certify that the ——— bales of ——— marked ———, mentioned and described in consular invoice No. ———, authenticated by me and about to be shipped by ——— from ——— via ——— to the port of ———, in the United States of America, have been thoroughly disinfected at ——— in accordance with method No. ———, as prescribed by the U. S. Treasury regulations of August 19, 1892, concerning the importation of rags into the United States, and that the inspection establishing these facts has been duly performed as per certificates on file at this consulate under my supervision by ———, authorized by me to act as such inspector.

I do further certify that to the best of my knowledge and belief the above-described ——— are now free from any infection.

Witness my hand and seal of office at Ghent this ——— day of ———, 189 .

—————,  
*Consul of the United States.*

These certificates accompanied every invoice of rags sent out from Ghent after Circular No. 143, Treasury Department, had been issued.

The inspection made of all the exporting establishments in this city, which have been described above, shows how utterly worthless they are; that no reliance can be placed upon certificates unless the disinfection has been supervised by inspectors who are appointed by and responsible to the U. S. consul, and under such restrictions and regulations as may be established by law to govern the whole matter of disinfection. Thousands of tons of rags have been sent into the United States from the city of Ghent alone, accompanied by certificates of origin and disinfection of which the foregoing are copies, which were gathered no one knows where (as it is impossible for the exporters to know whence they come), and which have never been disinfected in any manner, the plain instructions contained in the Treasury Department's circular having been ignored by the exporters in the most shameful manner, and certificates of disinfection sent with the goods which were fraudulent.

Having ascertained the condition of affairs in Ghent, we sent to the Surgeon-General of the Marine-Hospital Service, on December 21, a report embodying in brief all the facts above given.

December 21 we took the morning train for Courtrai, a small place about 27 miles from Ghent, where there is an establishment for disinfecting and packing rags for exportation. Upon arrival we were received by the proprietor, Mr. Henri Berson Jacques, who, at our request, conducted us to the disinfecting room connected with this establishment. It is a brick building 33 by 19 feet and 13 feet high, and was built especially for this work. It is fitted with three tiers of racks made of iron wire netting about 18 inches above each other. On these racks the rags are spread about 6 inches deep and remain there for thirty minutes, when they are dumped into a pile upon the floor and fresh rags spread on the racks. The pile is kept on the floors about six hours, when they are taken out and baled. Mr. Jacques informed us that he burned from 29 to 30 kilograms (about 60 pounds) of sulphur in twenty-four hours, and kept the fumigation going night and day. He says he puts about 400 kilograms of rags on the racks at each charge. The disinfecting room, he said, was built in consequence of an order issued to him by the board of health of Courtrai, and the method of disinfection followed by him was ordered by the same authority, and he is doing the work of disinfecting in compliance with those orders. He said that he shipped about 100 tons of baled rags per week, and that they now go to Horace Dutton, of Boston, by way of London.

We had been informed in Ghent that Mr. Jacques disinfected rags for one T. H. Ver Coutre. On being questioned as to this he replied that he did not disinfect rags for Mr. Ver Coutre or anybody else; that he worked for no one but himself; that he had corresponded with Mr. Ver Coutre upon matters pertaining to their business, but that he had never disinfected any rags for him.

This establishment is the best managed of any that we have so far visited, but does not carry out the instructions contained in Department Circular No. 143, as the quantity of sulphur burned in this large room is entirely inadequate to disinfect the rags, and they are permitted to remain but thirty minutes on the racks instead of six hours. It is but just to say that Mr. Jacques was apparently carrying out in good faith the orders which have been issued to him by the communal authorities of his town and that this method of disinfection was believed by him to be the same in effect as the method required by Circular 143. These rags are admitted to the United States upon certificates of disinfection already quoted (p. 47).

December 22, we went to Arseele, accompanied by Mr. Max Cohn, a member of the firm of Max Cohn, De Clercq & Co., whose disinfecting and packing establishment is located at that place. It is one of the largest establishments of the kind in Belgium, and "is located here," said Mr. Cohn, "because of the lower wages paid to the laborers in the country, and because many of the citizens of Ghent object to rag picking and disinfecting within the city limits. There is a growing prejudice in the minds of the people against the industry there, because of the liability to introduce smallpox in the rags." We were taken at once to the disinfecting room, which is located on the upper floor of a brick building, immediately under the roof. This room is 129 feet long by 40 feet wide and 10 feet high. There was one continuous rack extending over the room about 3 feet above the floor; over this the rags were spread to a depth of 6 inches. The floor was also covered with rags thrown down in heaps. Near the center of the room was a sulphur pot, placed inside a charcoal burner. There was but little sulphur burning in the pot. The fumes did not prevent us from remaining in the room until our examination was completed, but what fumes there were streamed out between the joints of the tiles of the roof and through the numerous broken window panes.



Mr. Cohn stated very frankly that they had not been disinfecting lately, "because it was the holiday season" and they "were going to take an account of stock," and that "the rags he had on hand were going to mills located in Belgium to make blotting paper;" that they had "started the fire to-day merely to show how we disinfect," and made no pretense that they were disinfecting the general output of the establishment. At the date of our visit there were very large piles of baled rags in the warehouses ready for exportation. In answer to our questions they said that the output was at this time 100 tons a week; that the rags came from Belgium and northern France; that they disinfect about 5 tons of rags at one charge and burn 50 kilograms of sulphur in twenty-four hours, which costs here 20 francs for 100 kilograms. They send most of their rags to London houses. The whole establishment is clean and neat contrasted with those in Ghent, and the rooms in which people work are properly ventilated. Mr. Cohn stated that the cost of disinfecting the rags was not much of an item, estimating it at about 5 cents per ton. When asked if he did not take into account the interest on the plant, he replied no, because, said he, "if we do not use the room for that purpose we should use it for some other." Asked whether there was not considerable expense attending the sorting of rags for fumigation, he replied, "No, they must be sorted to comply with the requirements of the trade, and the only item of expense which we could legitimately charge to disinfection would be carrying the rags to the disinfecting rooms, spreading them on the racks, and the cost of the sulphur burned in the process."

Speaking of the general subject of disinfection, Mr. Cohn stated that he had no faith in it whatever, and expressed himself emphatically upon the subject, saying that in his judgment contagion is never carried in rags, and that in his experience of twelve years in the business he had never known one case of sickness to occur among the employés of the establishment which could be attributed to handling rags. He told us that a firm in Berlin was collecting data from all the rag exporters, upon blanks sent out by that firm, to show the experience of each concerning the transmission of disease by rags; that the name of the firm doing this work is Lewy Bros. Our examination at this place convinced us that the process of disinfection, as we witnessed it, was a novelty. Officers and employés ran out of the building to watch the fumes as they came out through the roof and broken windows. The unusual and rather startling appearance of the volume of escaping "steam," as they called it, excited them, and they repeatedly called our attention to the circumstance. There appeared to be no intention to deceive us, but there was a total lack of information on their part as to the methods required by Treasury Circular No. 143. The burgomaster, Mr. St. Reynart, gives the certificate of disinfection upon which the U. S. consul at Ghent relies, that the rags have been disinfected in accordance with Department requirements, and upon which they are forwarded via London to the United States.

Mr. Cohn is the proprietor of two smaller establishments situated at Machelen and Vyngt. He stated that no disinfection is done at either place, the rags being sent to Arseele for that purpose. There is also another establishment for woolen rags at Waereghem, but they are not now shipped to the United States because of the duty on them.

At all of the rag establishments which we have visited thus far we saw what are called in the trade "new cuttings," pieces of new cloth coming from tailoring establishments and other places where new clothing is made up, mixed with the filthiest rags, which find their way into the sorting rooms and are there separated in accordance with trade requirements established by the rag exporters, who arrange the several grades of "new cuttings," "linens," "white and colored rags," through a descending scale, which includes the odds and ends picked up from gutter and ditch, including flax waste, old rope, and old bagging.

December 23, took the 5:30 train to Roulers, at which place we arrived at 11:30, and went to the establishment of Mr. Constant Van der Haeghe, the largest warehouse in Belgium and said to be one of the largest on the Continent. It is a brick structure built especially for this purpose. At present they employ 200 women sorters and a complement of other people. There are two disinfecting chambers, the main room being 20 feet long, 18 feet wide, and 12 feet high, containing 4 tiers of racks about 2 feet 6 inches above each other, on which the rags are spread about 3 inches deep, and where they remain for six hours before the charge is withdrawn and a new one introduced. About 5 tons of rags are disinfected at one time; the smaller room, similarly arranged, disinfected 3 tons at a time. Both rooms are practically air-tight; the joints about the doors are calked to prevent the escape of the fumes. The sulphur in each room is burned in an iron pot, about 16 pounds being consumed each day. This establishment carries out the fumigating process, if it is always as thorough as we saw it, in a way that leaves nothing to be desired, and is the only establishment so far visited where efficiency and thoroughness characterize the process of disinfection.

We met here the inspector, Dr. Emil Carlier, who told us that he visited the establishment twice every day, and he appeared to be thoroughly familiar with it.

At this time the weekly output of rags is 150 tons, but the proprietors informed us that if the market required it they could easily double this quantity. The rags go to the United States by way of London, the great bulk being consigned to Train, Smith & Co., of Boston.

Mr. Van der Haeghe said that he had rarely less than 3,000,000 pounds of rags on hand and that they are of all kinds known to the trade, from best "white linens," "white cotton," and all grades of colored rags, "new cuttings," "flax waste," "old bagging," and the heterogeneous mass which finds its way into such places.

The sorting rooms, and indeed the whole establishment, seems admirably adapted to the purposes for which it is used. There is good ventilation in every part, and if there is such an anomaly as a clean rag sorting establishment, it is to be found here. Dr. Carlier, the inspector, said that he had been employed by Mr. Van der Haeghe for many years, that he attended all his working people when ill, and that he had never known of a case of contagious disease among the employes of the establishment which could be attributed to sorting or handling the rags, and that he had never seen a case of anthrax among them; he said that every person employed about the establishment was vaccinated before going to work. Upon inquiring why they did this if there was no danger of contagion being communicated by means of the rags, the doctor hesitated some time, and finally replied, "It is done because we consider it a good sanitary measure." Both Mr. Van der Haeghe and Dr. Carlier said that disinfection was carried out by them as thoroughly as they knew how to do it, and our inspection of the establishment and of the method which we saw, confirmed their statement.

They do not disinfect "new cuttings," "flax waste" or "old bagging" as they say it is not required by the Treasury regulations. although all rags come to the warehouse mixed together in loose bales from the local dealers. We were told that the rags came mainly from Belgium, a very few from the north of France. One might infer from the information given by the several proprietors of these establishments in Belgium, that the staple product of this country is rags. The circumstance that all rags in this consular district are said to come from Belgium, naturally excited astonishment, and in response to questions on this subject, Mr. Van der Haeghe stated that he thought most of them came from Belgium because it would not pay to ship rags from a great distance, as "the profits are small." Where the rags actually come from is a matter of conjecture, and there is no evidence whatever to show that they are not gathered in Germany, France, or Russia, and our subsequent investigations showed that the rags forwarded to these very establishments were gathered in each and all of those countries.



The exporter does not stop to inquire, nor does he want to know, from what part of the world the rags come; he is simply interested in filling his orders. The only element to be considered is the one of freight charges, and as canals are common and run for long distances in all directions in this country, and as railway freight rates are low, this is not so important a matter as it is in other countries. As we were about to take our leave, Mr. Van der Haeghe said that he was earnestly endeavoring to comply with the Department regulations, but that he feared other dealers might not carry out the instructions contained in Department circular No. 143, and thus involve him in trouble with all the rest; and our investigations demonstrated that his fears, if not based upon actual knowledge, were remarkably shrewd opinions. That the margin of profits is fairly good in this business is made apparent by the circumstances that the dealers in Ghent and vicinity are all wealthy men; the enormous quantity of rags which we saw in and being received by the several establishments is an indication at least that the collectors and subdealers throughout the country are by no means inactive; and the fact that we saw them taken from both boat and railway car, in the loose bales, is an indication that they come from considerable distance.

The great anxiety manifested by all the exporters as to what the United States may do relative to the total suspension of the importation of rags is also an indication that there is a margin of profit in the business, which they are loath to give up.

There is another warehouse at Roulers, that of Eugene Legein Moerman; he was not an exporter, sending all his rags to local paper mills, and he has no disinfecting establishment.

The rag business in Belgium has grown to be enormous, amounting to millions of dollars annually. It has become a central position for the business because of its contiguity to France, Holland, Germany, and Russia. The numerous canals and railroads afford ample opportunity for transportation, and as they all converge at Ghent it is a natural depot for the large exporting houses. Labor is extremely low; the men who work at these places receive an average of 1 franc per day (19 cents), and the women and children, of whom great numbers are employed, receive from 8 to 14 cents per day. Out of this sum they board and lodge themselves, yet competition in labor is so great that even at these starvation rates there is active demand for every place which becomes vacant.

With the exception of the Van der Haeghe establishment at Roulers, the methods of disinfection thus far seen are carried out in a manner that is useless. In most places it was done to deceive us, and the efforts can only be characterized as stupid and bungling.

There is no supervision of the inspectors by the U. S. consul or by anyone acting in his behalf; the certificates of disinfection are sent by the inspectors (who are appointed and paid by the proprietors of the warehouses) to the U. S. consul, who accepts them, and millions of pounds of rags go to the United States marked "Disinfected" which have never been near a disinfecting chamber.

Our investigations clearly establish one point: Disinfection to be effective must be applied to all the articles handled at the rag warehouses, whether called "linens," "white" or "colored rags," "new clippings," "flax waste," "old bagging," or any other grade known to the trade, for one may carry the disease germs as readily as the other, and nothing short of the complete disinfection of the whole can be of any value. To insure its thorough performance, the regulations prescribed by the Treasury Department must be carried out under the supervision of officials appointed and paid by the Government of the United States, who should be made responsible for the proper performance of their duties to the U. S. consul, under such regulations and safeguards as will insure the proper performance of the work.

Having completed our investigations at this point, we returned to London on the 1st of January, 1893, and at once called upon U. S. Consul-General New, who



gave us a letter of introduction to the rag exporters in London, one of the largest being A. Cohen & Co.

We called at the office of Mr. Cohen, which is situated at some distance from the warehouse. We asked permission to visit his disinfecting rooms, but our request was answered by a variety of excuses, and a decided desire on the part of Mr. Cohen to make an appointment for some other day. After consultation with other members of the establishment Mr. Cohen said that it would be impossible for him to go just then, but if we would return in an hour or two he would go with us. At the end of an hour we returned, and, accompanied by Mr. Cohen and his brother, we went to the warehouse, which is located on the banks of the Thames River, near Southwark Bridge. After some delays we were slowly conducted through the large establishment to the upper floor and the door opened into the disinfecting room. The fires in the iron pots, on which the sulphur had been sprinkled, had just been lighted, so that the sulphur fumes had not commenced to rise, and we were thus enabled to remain in the room as long as we pleased.

The room is about 30 feet long by 16 feet wide by 10 feet high; in it were four tiers of iron racks about 2 feet above each other, the lowest rack being perhaps 3 feet from the floor. The floor was covered with piles of rags, and they were placed on the racks so deep that at first it appeared as though a continuous pile of rags extended from the floor to the top of the room. In attempting to separate the rags at the edge of one of the racks, so as to examine its construction, we found the rags packed so solidly that they could not be moved. The man sent to assist us gave a vigorous pull at the bunch, and a full bale of rags, which had been opened at its edge and the sacking turned back so as to expose the rags, rolled from the rack upon the floor. We then attempted to raise the rags from the edges of the other racks, but they were all packed too solidly to admit of movement.

When we met Mr. Cohen in his office he told us that it was useless to go to the warehouse that day, because there was no disinfection being done and he knew the sulphur had not been lighted; that the employés were all away, and the place would be locked up so that we could not gain admission until 2 o'clock.

We told Mr. Cohen that we were glad the sulphur had not been lighted, because it would give us an opportunity to make a more thorough examination of his disinfecting chamber, and we requested him to send word to the establishment that the sulphur fires might not be lighted until after we had completed our examination, which he said he had done. In view of all these circumstances we can but characterize the action of Mr. Cohen as an attempt to prevent the examination we had requested. Mr. Cohen assured us that all the rags in the establishment had been gathered in England; that they were not permitted to receive rags at this time from any place outside of England. Like all the other dealers, he stated that he had never known a case of contagious disease to occur among the employés which could be attributed to handling or sorting the rags in the forty years he had been in the business, and that he did not consider disinfection to be of any value. If all rags were to be "disinfected" as they are at present in this establishment, we could unhesitatingly reiterate his opinion.

From Mr. Cohen we could get no definite information concerning the number of bales he shipped to the United States, the number of his employés, or the quantity of sulphur which he burned in his disinfecting chamber. His answers to our questions were all vague and indefinite. The establishment is a very large one, and we saw great numbers of "loose bales" being taken into the sorting rooms, and the pressed bales, intended for exportation, going out. In the lower part of the building there was an immense quantity of bales awaiting shipment, upon which there were no marks or brands and no certificate of any kind. Mr. Cohen told us that there was no distinguishing mark upon the bales to show whether they had been disinfected or not, and that he himself could not tell.

Prior to visiting this warehouse the consul-general had furnished us with the blank forms he had caused to be printed, and which were sent with each invoice of rags to the United States. Among them is one which is signed by the physician employed by the consul to inspect the disinfection. These certificates are signed "J. Higham Hill, M. D., sanitary inspector at London, England, for the United States of America." We were told by the consul that this form was filled out and attached to each bale of rags, under the immediate supervision of Dr. Hill, and that it is upon this certificate that the quarantine officers at ports in the United States permitted the invoices of rags to enter the country, and it was one of these certificates which Dr. Kempster saw on the 26th of November in the office of the collector at the port of New York.

In the office at Mr. Cohen's rag warehouse we saw (January 2, 1893) one of these certificates lying upon the desk, signed "J. Higham Hill" and dated "December 29, 1892." The space for "No. or mark" of bale being left blank, it was only necessary to fill in the particular number required and place the certificate on the bale, which of course could be done by anyone. We were informed by Consul-General New that Dr. Hill attended exclusively to disinfection and that he made out all the necessary certificates; that the doctor furnished the form for the blanks (see below), and that upon them he, the consul, issued the invoice. The consular fee for certificates of disinfection is 10 pence per bale. Consul New informed us that he had been told that many of the rags at the Cohen and other establishments were disinfected upon the floor of the room; that this method was believed to be as efficacious as though they had been placed on racks. He also told us that he had information which he believed to be reliable that there was an organized plan among the exporters and shippers to introduce rags into the United States in total disregard of the Treasury regulations, confirming statements made to us while pursuing our investigations in Ghent; and Consul New gave us some valuable information as to where he thought some of this underhand work was going on. We subsequently investigated this matter and found that the consul had not been misinformed.

Consul-General New stated that the regulations concerning the importation of rags into the United States were most unsatisfactory; it was a frequent occurrence that rag exporters brought cablegrams for him to read which they had received from their agents in the United States (one of which he showed us) that contained information concerning new regulations made by the Treasury Department of which he had no other knowledge. The cablegram he showed us stated, among other things, that the shipment of rags from Ghent had been stopped by order of the Treasury Department. He said he had no official information of the fact, and that this cablegram was all he knew about it. He was therefore unable to advise those dealers who had a shipload of rags from Ghent waiting to go forward whether they would be permitted to land in the United States or not.

The following are the blank forms in use at the consulate in London, England:

No. —

No. of invoice —

#### CERTIFICATE OF SANITARY INSPECTOR.

I, Joseph Higham Hill, M. D., sanitary inspector at London, England, for the United States of America, do hereby certify that the rags mentioned in the invoice hereto annexed, consisting of — bales, marked —, and bearing my certificate, have been disinfected under my supervision in accordance with the process No. 3, prescribed in circular No. 143, of the U. S. Treasury Department, of August 19, 1892.

Attest: —,

*Sanitary Inspector, London, England.*

LONDON, ENGLAND, —, 189 .

CONSULATE-GENERAL OF THE UNITED STATES OF AMERICA,  
*London.*

I, Francis W. Frigout, do hereby certify that the above is the true and genuine signature of Joseph Higham Hill, M. D., and that he was, on the date of signing the foregoing certificate, authorized to superintend the disinfection of rags intended for shipment to the United States of America from the port of London.

Dated at London, England, this ——— day of ——— 189 .

In testimony whereof, I have hereunto set my hand and affixed the seal of the consul-general, at London, this day and year next above written.

\_\_\_\_\_,  
*Deputy Consul-General.*

CONSULATE-GENERAL OF THE UNITED STATES OF AMERICA,  
*London, England.*

The rags contained in this bale marked or numbered ——— have been duly disinfected under my supervision, in accordance with process No. 3.

\_\_\_\_\_, M. D.,  
*Sanitary Inspector.*

Label No. —.

NOTICE TO SHIPPERS.

CONSULATE-GENERAL OF THE UNITED STATES OF AMERICA,  
*London.*

All rags, paper stock, bagging, feathers, raw hides, hair, wool, fibers, or other substances likely to carry infection must, in all cases, be accompanied by certificate of origin or disinfection, declared to or certified at this consulate-general.

Forms for above declaration supplied on application.

[To be furnished in duplicate.]

KINGDOM OF GREAT BRITAIN AND IRELAND,  
*City of London, England..*

I, [here insert all names of deponent in full], a partner in the firm of Messrs. [name of firm], of [full address], London, England, do solemnly and sincerely declare that the following goods, viz: [Description of goods with marks and numbers of bales or packages] shipped by steamship ——— to ———, were imported from ———, per steamship [name of import vessel] to [port]: that at the time of shipment no cholera or other contagious disease existed in the district from which these goods came or passed through in transit, and moreover the steamship [name of import vessel], which steamer carried the goods, received a clean bill of health on clearing outwards.

OR [this paragraph to be stricken out if former paragraph is used or vice versa] [To be used for goods collected in United Kingdom.] { shipped per steamer [name of steamer] to [port of transshipment], for account of M. [name of merchant or firm on whose account goods are shipped] of [place of residence of above], have been collected in [district where goods were collected], where there was no cholera or other epidemic prevailing at the time of shipment. [Any further facts which deponent deems necessary to insert.]

And I make this solemn declaration, conscientiously believing the same to be true, and by virtue of the statutory declarations act, 1835.

Declared at No. 12 St. Helens place, in the city of London, this — day of [fill in date when paper left at U. S. consulate], 189 , before me, a commissioner to administer oaths in the supreme court of judicature in England. [Usual signature of deponent, not that of his firm.]



## CONSULATE-GENERAL OF THE UNITED STATES OF AMERICA,

*London.*

I, Francis W. Frigout, deputy consul-general of the United States of America at London, England, do hereby certify to all whom it may concern that Thomas Hewett, before whom the above declaration was made, as appears by his signature thereto, is a commissioner to administer oaths in the supreme court of judicature in England, practicing in London, and that to all acts so signed full faith and credit are and ought to be given in judicature and thereout.

In testimony whereof I have hereunto set my hand and affixed my official seal, at London, England, this — day of [fill in date when left at U. S. consulate], 189 .

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*Deputy Consul-General.*

January 3, called at the United States legation and requested Mr. White, chargé d'affaires, to procure for us all documents and orders which had been issued by the British Government relative to the introduction of rags into the United Kingdom, and any regulations which may have been issued by the board of trade, or the health boards, concerning the importation or exportation of rags; also, such documents as may have been issued by the British Government relative to quarantine made with reference to the present epidemic of cholera.

The next day we received from the legation copies of the orders and regulations requested, from which we make the following extracts.

The first in order is dated July 11, 1892, and is directed "To all port sanitary authorities, to all urban and sanitary authorities, to all medical officers of health of the sanitary authorities aforesaid, to all officers of customs, to all masters of ships, and to all others whom it may concern:

"Whereas cases of an infectious disease alleged to be cholera now exist in certain parts of France, and it is expedient that regulations should be made as hereinafter mentioned with reference to ships having on board bales of rags from that country;

"And whereas the commissioners of Her Majesty's customs have signified their consent to the regulations herein contained so far as the same apply to the officers of customs:

"Now, therefore, we, the local government board, do by this our order and in exercise of the power conferred on us by section 130 of the public health act, 1875, by the public health act, 1889, by section 113 of the public health (London) act, 1891, and every other power enabling us in this behalf to make the following regulations and declare that they shall be enforced and executed by the authority or authorities hereinafter specified. [Here follows a long statement defining the above-mentioned authorities.]

"ART. 2. From and after the 12th day of July, 1892, and until we shall by order otherwise direct, no rags from France shall be delivered overside except for the purpose of export, nor landed in any port or place in England or Wales.

"ART. 3. If any rags shall be delivered overside or landed in contravention of this order they shall, unless forthwith exported, be destroyed by the person having control over the same with such precautions as may be directed by the medical officer of health or the sanitary authority within whose jurisdiction or district the same may be found.

"ART. 4. All masters of ships, consignees, and other persons having control over any rags prohibited under this order from being delivered overside, except for the purpose of export or landed, are required to obey these regulations.

"ART. 5. All officers of customs are empowered to prevent the delivery overside or landing of rags in contravention of this order.

"ART. 6. It shall be the duty of the sanitary authority to take proceedings against the masters of ships, consignees, or other persons having control over any rags who shall willfully neglect or refuse to obey or carry out, or shall obstruct the execution of any of these regulations.

"Given under the seal of office of the local government board this 11th day of July, 1892.

"CHAS. T. RITCHIE, *President*.

"S. B. PROVIS, *Assistant Secretary*.

"Notice.—The public act, 1875, provides by section 130 that any person willfully neglecting or refusing to obey or carry out or obstructing the execution of any regulation made under that section shall be liable to a penalty not exceeding £50."

Under date of 13th of July, 1892, another regulation was issued precisely similar in form to the foregoing, article 2 of which is as follows:

"From and after the 15th day of July, 1892, and until we shall by order otherwise direct, no rags from any port on the Black Sea, or the Sea of Azov, whether in Russia, Roumania, Bulgaria, or Turkey, or from any other port of Turkey in Asia, shall be delivered overside, except for the purpose of export, nor landed in any port or place in England or Wales."

The balance of this order is precisely the same as that of the foregoing. On the 11th of August, 1892, a similar order was issued, of which article 2 is as follows:

"From and after the 19th day of August, 1892, and until we shall by order otherwise direct, no rags, bedding, or disused or filthy clothing, whether belonging to emigrants or otherwise, from any foreign port in Europe north of Dunkirk, other than ports of Norway, Sweden, and Denmark, shall be delivered overside except for the purpose of export, nor landed in any port or place in England or Wales."

Article 3 provides that "any of such goods landed in contravention of this order, unless forthwith exported, shall be destroyed."

The preceding orders were supplemented by another issued December 14, 1892, similar to the foregoing, but more explicit, from which the following extract is made:

"ARTICLE 1. In each of the above-cited orders the term 'rags' shall mean only such rags of whatever material within the meaning of the term 'rags' as used in the official custom import list, as—

"1. Are dirty or mixed with dust; or

"2. Are articles of clothing or bedding or have formed part of any article of clothing or bedding and have not been remanufactured or partly remanufactured; or

"3. Are packed with any rags in (1) or (2).

"ART. 2. In article 2 of the above-cited order, dated the 11th day of August, 1892, the word 'dirty' shall be inserted before the word 'bedding,' so that subject to this order the said article shall provide that until we shall by order otherwise direct, no rags, dirty bedding, or disused or filthy clothing, whether belonging to emigrants or otherwise, from any foreign port of Europe north of Dunkirk other than ports of Norway, Sweden, and Denmark, shall be delivered overside except for the purpose of export, nor landed in any port nor place in England or Wales.

"ART. 3. Each of the above-cited orders shall be amended so that—

"1. Rags, bedding, or clothing prohibited by any of the said orders from being either delivered overside, except for the purpose of export, or landed, may be delivered overside or landed for the purpose of disinfection.

"2. Any such rags, clothing, or bedding delivered overside or landed for the purpose of disinfection shall not be taken out of the custody of the officers of customs until the same shall have been disinfected by and at the cost of the consignee or

other person having control over the same, by means of steam under pressure in such manner as to secure the exposure of every part of the bale, package, or parcel, or of every article, to a temperature of not less than 212°, nor until the medical officer of health shall have given a certificate to an officer of customs as to such disinfection, which certificate shall be in the following form:

“Ports of ———.

“I hereby certify that the (rags or bedding or clothing) delivered overside or landed at this port from the ship ——— of or from ——— and consigned to ——— and distinguished by the following marks and numbers ——— have been disinfected at this port in accordance with the provisions of article 3 of the order of the local government board, dated the 14th of December, 1892.

“—————,

“*Medical Officer of Health.*

“Date ———, 189 .”

Article 4 provides that “all expenses incurred in watching the goods or for disinfection shall be paid by the person having the control of the same.”

Article 5 provides that “any such rags, bedding, or clothing landed for the purpose of disinfection shall be destroyed if they have not been disinfected within seventy-two hours from the time of landing.”

January 5, 1893, we met by appointment several gentlemen, who gave us valuable information concerning the places where we could see the transshipment of rags which had come from the Continent, and which were to be sent to the United States in violation of the U. S. Treasury regulations.

January 6 we visited the places indicated and found the work going on as reported at the wharves along the banks of the Thames not far from Gravesend. The parties engaged in this business told us that rags had been coming steadily from the Continent, and largely from Belgium, since the time when orders were issued by the United States authorities prohibiting the introduction of rags from the Continent into the United States; that the transshipment had been active all through the autumn months. The reasons why rags are sent to London are because English rags are not prohibited from landing in ports of the United States, and because the freight rates from London to the United States are lower than from continental ports. The steamships engaged in this trade, as a rule, take only a limited quantity of rags, because of their bulk. One of the shippers said the rags which would pay them only a shilling for freight would occupy the space for which heavier freight would pay 25 shillings; therefore they restricted themselves as to the quantity they carry.

Ships load with all the ordinary freight they can get and fill up the balance of space with baled rags. This shipper informed us that they did not wish to carry rags against United States regulations, but so long as other lines did so they felt themselves forced to do it; that they would be very glad if the whole business could be stopped. He said that the rag exporters made sport of the regulations of the United States concerning the disinfection of rags, and they characterized “the whole business as a farce; that all they had to do is to take an inspector into the establishment, show him a pile of rags which they said had been disinfected, and receive a certificate from him.” He furthermore said, “It is generally understood by the shippers that if a party desires to get rags into America he must make himself solid with the custom-house authorities where the rags are going, and then there would be no difficulty in landing them; that the whole thing was largely a matter of political influence.” Our informant stated further that “all rags shipped from England to America at this time are provided with certificates of disinfection, but these certificates are not at all difficult to obtain.” He said, furthermore, that “the recent order of the Treasury Department, dated December 27, 1892, the full text of which had been cabled by the rag dealers in America



to exporters in London, would so increase the price of rags that they would come in larger quantities from the Continent to England in order to supply the demand ;" that "the quantity of rags going through England from the Continent varied greatly; just at the present time there was a lull in the business." This conversation and the examinations consequent, which lasted several hours, corroborated what we had heard at Ghent and elsewhere. The shipper had no hesitation whatever in proclaiming that they were all carrying the rags in contravention of the United States regulations, but that it was done openly and aboveboard and in accordance with the British regulations previously quoted.

January 7, called upon the U. S. minister, Robert Lincoln, and made him acquainted with the general results of our investigation in London; also called upon Consul-General New and informed him of the real condition of affairs at Mr. Cohen's warehouse and of the transshipment of rags to the United States. A summary of all our investigations was written out and forwarded to the Surgeon-General of the Marine-Hospital Service on January 8, 1893, and we also sent a cablegram informing him of the fact that British laws permitted continental rags to be landed for reshipment to America, but forbade them to enter the British dominions.

January 9, 1893, we left London for Brussels, reaching that place at 7 o'clock p. m., and the next morning called upon U. S. Minister Terrell and requested him to procure for us from the Belgium Government any orders, regulations, or documents of any kind concerning the shipment of rags into or out of the Kingdom; also any documents relating to the present epidemic of cholera which the Government may have issued. (We have received no documents of any kind in response to this request.) We afterwards called on U. S. Consul Roosevelt, who informed us that a deputation of rag exporters from Ghent visited him one day last week and told him that the U. S. Government had sent some inspectors to Ghent to investigate the subject of disinfection of rags; that they were afraid their rags would not be admitted, and wanted him to use his influence to help secure the admission of their rags into the United States, which he informed them he could not do.

He told us that the rag-exporting establishments at Vilvorde, near Brussels, had recently made two shipments of rags directly to America that he knew of; that his deputy consul had been to Vilvorde to examine the methods of disinfection in use at that place, and had reported that it was not satisfactory. He told us that a week ago Mr. Minne, an agent of West & Penrose, shippers of rags, called upon him, and stated that he had a ship's cargo of rags coming to Belgium direct from Russia, but that the ship was delayed by ice, and he desired to know whether he could not then procure an invoice from him so as to send them immediately to the United States. Mr. Roosevelt told him of the recent regulations which prevented the introduction of rags into the United States from Belgium, and that he could do nothing for him. He said, these rags are now afloat somewhere and will probably go to London. The deputy consul told us that he had been to Vilvorde for the purpose of examining the method of disinfection in use at that place, but that at the time of his visit the sulphur had been ignited in the disinfecting chamber, and he was told by the proprietor that it would be impossible for him to go in. He did, however, walk into the room and satisfied himself that disinfection was not being carried out in accordance with Department circular No. 143.

#### CHOLERA.

Referring to the subject of cholera, Mr. Roosevelt said that in a suburb of Brussels named Molenbeek there had been a number of cases of cholera during the autumn, and that they had occasional deaths from this disease there at this time; this quarter of the city is generally spoken of as a "pest hole;" it is inhabited

by the lowest class of people, principally canal men; that the first case of cholera which occurred was a canal boatman who came from Antwerp. Mr. Roosevelt said there is a general feeling of uneasiness among the people of Brussels, in which the sanitary authorities participate, for they fear there will be an outbreak of cholera during the spring or early summer. Their opinions are based upon the circumstance that the disease has continued through the winter up to the present time; furthermore, that there are a number of small places situated within the suburbs of the city in which there are occasional attacks of cholera and some deaths at this time. The weekly statistics issued by the sanitary authorities show that deaths from diarrhea and enteritis are now high; the official report for the week ending January 7, 1893, shows 2 deaths from cholera and 18 deaths from diarrhea and enteritis.

The water supply of Brussels is excellent, being brought to the city from springs which are situated in a forest about 18 miles distant; the city itself is scrupulously clean, and the authorities are taking extraordinary precautions to keep it so.

January 11, took the morning train to Vilvorde and went to the rag establishment of Heymann & Co., which is the only place of the kind near Brussels. It is a very large brick building, and at the date of our visit we were told that more than 2,000,000 pounds of rags were baled and awaiting shipment to the United States.

The proprietor said that for the present the direct shipment of rags had been stopped. At the date of our visit the outside of this large building was completely covered with rags, apparently old clothes, which were hung to dry or air on pegs driven into the walls. It was a filthy lot of stuff, and the odor from the mass was sickening. We asked to be shown into the disinfecting room, and were conducted into one arm of the building about 200 feet long, 40 feet wide, and 20 feet high. There were numerous large windows along one side; on the other side there were bins, each about 6 feet wide and running up nearly to the roof.

The proprietor informed us that they filled the bins with rags, then ignited the sulphur in three iron pots placed on the floor. The perfect sincerity of the statements made by the proprietor convinced us that he had not the slightest idea of what was meant by disinfection, and he said that they had never heard of the circular issued by the United States. This "disinfecting" room opened into the other branches of this enormous establishment by means of large brick archways. Many panes of glass were broken out of the windows along the front of the building, and the roof of slate, joined in the usual style, made it impossible to disinfect rags in this room even if they had racks properly constructed, yet the rags shipped from this place are sent to the United States with a certificate that they have been "disinfected according to method No. 3 prescribed in Department circular No. 143," and are freely admitted at any port to which they may be consigned. It is due to say that there was no desire on the part of the proprietor to conceal anything from us about the establishment, and he explained to us with evident satisfaction how large a quantity he could fumigate at one time by filling all the bins. He told us that he shipped to the United States more than 1,000 tons a year, the last shipment having been sent fourteen days ago.

In response to our inquiry he stated that all the rags he received were gathered in Belgium, and the usual response was made that he had never known a case of contagious disease or of a sore finger (anthrax) to occur among his employés; for some time past, he said, "I vaccinate everybody who comes to work for me." The whole warehouse was saturated with a horribly pungent stench; at no other establishment have we seen greater necessity for thorough disinfection or such an absence of means to do it.

The village of Vilvorde is very small and the rags received there must come into

it by rail, as it is not near a canal or river, and the immense stock handled can not be gathered in the immediate neighborhood.

January 13 we left Brussels for Antwerp, and called upon the U. S. consul, G. F. Lincoln, who told us that there were but two large rag-exporting establishments in his consular district. After receiving the Department order requiring disinfection of rags, his deputy visited these places to see how the work was done. Mr. Sherman, the deputy, explained to us that their method was to open the bales, pile the rags in heaps on the floor, and burn some sulphur in an iron pot, allowing the rags to remain for six hours in the fumes, after which they were rebaled and shipped to the United States. During the recent cholera epidemic the municipal authorities forbade the introduction of rags into Antwerp and afterwards they ordered that all rags coming into the city must be disinfected. Rags are not exported to the United States at present, but they are shipped to other places, most of them to England.

#### CHOLERA IN ANTWERP.

In response to inquiries Mr. Lincoln said that cholera was introduced into Antwerp by a ship which came from Havre; that most of the cases occurred among the people who lived near the canals and wharves where they were employed, and where the water becomes very stagnant owing to the conformation of the basins. The first case was reported on the 15th of August, 1892, and during the entire epidemic there were in the province of Antwerp 798 cases and 400 deaths up to the end of November, 1892; the highest number of cases in Antwerp occurring in one day was 12, the highest number of deaths in one day, 5. The accompanying diagram, prepared by the health officers of the province, shows the fluctuations of the epidemic of 1892. There is a general impression among the health authorities that there will be a recurrence of cholera during the coming summer, and the sanitary authorities are making what preparations they can to prevent it. Consul Lincoln made some suggestions, which had been proposed by other consuls we had visited, to the effect that consular officers should be permitted to cable direct to the Department the exact condition of the health of their respective districts as often as the conditions seemed to demand it, which they were not now authorized to do. He also called our attention to the form of a bill of health issued by the State Department, which the consuls found it almost impossible to prepare in accordance with Department regulations; he suggested that the consular officers be required to indorse upon the weekly bulletins issued under the seal of the governmental authorities of the several consular districts, upon forms which in this case are prepared by the Belgian health officers, the facts concerning the sanitary condition of the district, as certified to the consul, by the health authorities. The health board at this place consists of a chairman, who is a cabinet officer, and three other persons, one of whom must be an eminent physician, the others a burgo-master or prominent official or citizens. From time to time these officials issue a bulletin in form prescribed by law, in the body of which is written the number of cases of cholera or other infectious disease, and whether it is sporadic or epidemic in character. This document is signed by each one of the officials under his own seal and is the official document of that particular community. The facts contained therein are derived from the regularly constituted authorities in each province, and is in fact the only official information to be had on the subject.

If the consul were authorized to forward one of these forms, indorsed by him, certifying its authenticity, the Government would then have the precise information which the Government here possesses, and our consular officers would be relieved from making a separate statement, which must be sworn to by them as the truth, and for which they must rely upon statements made through the ordinary channels.



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Overlijdens —•— Décès

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Consul Lincoln furnished us with the form issued by the Belgian Government, with his certificate attached, together with the bill of health used by him at this consulate, of which the following are copies:

No. —.

Sanitary service of the —.

[SEAL.]

# BILL OF HEALTH.

The sanitary commission of the — certifies that the steamship called —, captain —, gauging — tons, under flag —, leaves this port loaded with —, having on board — persons, comprising the captain and — passengers; according to the register visé at the bureau of the marine to go to —.

It is further declared that at Antwerp or its environs there is no epidemic disease.

Given at Antwerp, —, 189 .

\_\_\_\_\_,  
Secretary.

\_\_\_\_\_,  
*The Governor of the Province, President.*

Members of the medical commission of the province:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# CONSULATE OF THE UNITED STATES OF AMERICA,

*Antwerp, 189*

I, —, consul of the United States of America for Antwerp, do hereby certify that the signature of — and the seal of — to the instrument of writing hereto annexed are true and genuine, and as such entitled to full faith and credit.

Given under my hand and seal the day and year above written.

\_\_\_\_\_,  
*U. S. Consul.*

# CLEAN BILL OF HEALTH.

# CONSULATE OF THE UNITED STATES OF AMERICA,

*Antwerp.*

I, —, consul of the United States of America at Antwerp, do hereby certify that the — called the — of — burden per register — tons, commanded by —, navigated by — men, and having on board — passengers, leaves this port of Antwerp in free pratique, bound for —.

I certify that good health is enjoyed in this town and the adjacent country, without any suspicion of plague, cholera, or contagious distemper whatsoever.

In witness whereof we have hereunto set our hand and seal of office, at Antwerp, this — day of —.

\_\_\_\_\_,  
*U. S. Consul.*

We were furnished with a statement made by a gentleman of distinction residing in Antwerp, whose name we were requested to withhold, with the following facts concerning former epidemics of cholera in Antwerp which had occurred during his official residence in this city and which he said were obtained from provincial records. The statement is as follows:

"In the year 1831 there were a few sporadic cases of cholera, followed by the severe epidemic of 1832. In 1848 there were but few cases in the city; these were followed by the severe epidemic of 1849. Again in 1853 there were but a



small number of cases, followed by the epidemic of 1854. In 1858 only a few cases occurred, but in 1859 came the general epidemic. In 1865 there were a few cases in Antwerp, but the year 1866 brought the severe epidemic. Now," said he, "we have had the outbreak of 1892, and it remains to be seen what next year will bring forth. Judging from the records of former outbreaks in this city, we have some reason to expect the full epidemic in the summer of 1893."

January 14, by appointment, we had a lengthy interview with officials of the Red Star Steamship Company, Mr. Marsily and Mr. Strosser being present. The object of our visit was stated to them and they promptly offered us every facility to examine for ourselves into all details concerning the manner in which emigrants are cared for and the preparations which they are now making to carry out the requirements of the United States concerning disinfection of emigrants' baggage and measures for preventing the introduction of diseases into the United States. These gentlemen told us that they had now arranged matters so that every emigrant arriving in the city was taken at once to boarding houses, which are supervised and under the control of the steamship company. Any person who received boarders into his house, refusing to comply with the rules of the company, was stricken from their list and is not allowed to receive, board, or lodge any emigrants. At this time the rooms of the several lodging houses in the city are being measured by competent engineers to determine the cubic capacity of each with a view to limit the number of persons assigned to each room.

It is the company's purpose to place a placard in each room, printed in all the languages ordinarily used at this port, which will state, among other things, the number of persons who will be permitted to sleep in the room. They informed us that it is their purpose to fumigate all rooms at certain fixed intervals in any event, and as frequently as may be found necessary, in case of actual or supposed contagious diseases occurring at any time. The boarding houses visited were clean and well aired, the beds comfortable, the food plain, but abundant; the prices for board and lodging range from 30 to 75 cents a day, according to accommodations. Mr. Strosser stated that in his opinion the best way to prevent the spread of contagious diseases was to interdict the entrance of any person from an infected city into any other; that it would be the best policy for the American and all other governments to suspend emigration from any country in which contagious diseases were epidemic until the subsidence of the epidemic; that this would not be a hardship upon anyone and it would certainly restrict the spread of the disease.

Relative to the disinfection of emigrants' baggage, we had an extended conversation, and they related to us what they had hitherto done.

When cholera first appeared on the Continent the steamship company endeavored to formulate a plan as to what could be done. Before it was positively known that cholera existed, there had already been forwarded to them for shipment to New York a quantity of baggage. As they had no disinfecting chamber they put the baggage in the hold of the ship, ignited pots of sulphur, closed and caulked the hatchways and kept them closed for a period of six hours. This was done under the inspection of one of the surgeons employed by the steamship company and some one sent by the American consul to watch the operation. After one cargo was thus fumigated, they decided that this method affected only the exterior of the packages, and it would be necessary to adopt more decisive measures. Much of the baggage belonging to emigrants is forwarded by them from their homes to New York in bond, so that upon arrival in Antwerp the baggage remains in the custody of the customs officials until it is placed in the hold of the steamer, the customs authorities remaining on duty watching the bonded packages until the steamer leaves the wharf; hence it is impossible for them to open baggage coming in bond. They estimated that during the last season nearly 80 per cent of the

baggage coming to Antwerp was forwarded in bond, this plan affording the immigrant immunity from the many customs examinations which necessarily occur in traveling across any considerable part of the Continent of Europe to Antwerp. As a good many emigrants have from two to six packing cases or boxes, the customs examination at each border is very troublesome to them, and they obviate the whole difficulty by having their baggage forwarded in bond.

The quantity of bonded baggage has increased to such an extent that the Red Star Company has been compelled to build a large room at their wharf into which this class of baggage goes for the convenience of the customs authorities, who have no room in which to put it, and unless there was some modification of the Belgian law relating to baggage in bond, which it was not to be expected would be made at their request, they did not see how it would be possible for them to disinfect this class of baggage on this side. During the conversation, Mr. Strosser said there are twenty-two ports along the Atlantic coast on this side of the ocean from which emigrants embark. To carry out the regulations required by the U. S. Government it would be necessary for each port to have a disinfecting apparatus if baggage is to be disinfected on this side. Said he, "It is my idea that all companies should unite and cause to be erected at three or more of the principal ports of entry in the United States apparatus adequate to do this work properly, the disinfecting rooms to be constructed according to plans prepared by sanitary authorities, and the disinfection carried out under the supervision of United States officials according to their own methods." Continuing, he said: "There are several advantages in this plan. The baggage is all together; the emigrant must remain at the port of entry until his baggage is disinfected. As it is now, even if the baggage does not come to us in bond, he arrives with his boxes in the morning, expecting to leave on the steamer which sails the same day, which, of course, would not give us sufficient time for the work to be properly done. If all the steamship companies were to unite in this plan it would be less expensive, it would occasion less inconvenience to the emigrant, and would be more effectively carried out at those places properly equipped than it is possible to do at the twenty smaller ones on this side of the Atlantic."

The officers of the Red Star Steamship Company informed us that they now endeavor to disinfect the baggage of emigrants by removing everything from the trunks and boxes that were not in bond. We visited the room where this work is now done. It is 70 feet long by 20 feet wide and about 14 feet high, lined with sheet iron and made as tight as practicable. In the room there are three tiers of racks, one along each side, and one extending through the middle, leaving two passageways from end to end of the building. On these racks we saw the baggage of 278 steerage passengers spread ready for disinfection by sulphur fumes. Mr. Strosser explained that the room was entirely inadequate to disinfect all the baggage which came to Antwerp, as some ships carry from 800 to 900 steerage passengers, and as a rule these people reach Antwerp a few hours before the boat sails. Said he, if the U. S. Government insists that disinfection shall be done on this side it will be necessary for us to compel the passengers to wait here a week, because it will be impossible to find room anywhere near the docks on which to erect a disinfecting plant of the size requisite to disinfect the baggage for such a number of people, and this does not provide for the disinfection of baggage in bond. Again, said he, it is the general opinion of the steamship companies that when cholera becomes epidemic emigration will be stopped by proclamation of the President; therefore it would be a useless expenditure of money to erect buildings large enough to disinfect all the baggage coming to ports of departure. In response to our inquiries, Mr. Strosser said he was quite clear upon the point that it would be better for all continental steamship companies to unite and build disinfecting plants at the principal ports in the United States, and that he believed such a

method would be acceptable to all; that it was his purpose to submit the plan to the next general meeting of the steamship companies, soon to be held, for the purpose of eliciting opinions from the members of the association. Mr. Strosser extended a cordial invitation to us to be present at the next meeting of the association, promising to notify us by telegraph when the date should be fixed.

Since the date of our visit at Antwerp the Red Star Company, finding the disinfecting chamber entirely inadequate to do the work required, have commenced the constructing of a steam-disinfecting chamber for baggage, which they believe will meet all demands likely to be made upon them.

Speaking of the cholera epidemic just ended, Mr. Strosser stated that the municipal authorities of Antwerp took immediate possession of every house in which a case of cholera occurred and removed all the people from it, sending the sick to hospitals and the suspected to detention buildings. They then sent a portable engine, owned by the city, to the house, which was sealed as tightly as possible, and forced steam, impregnated with sulphurous acid gas, through the entire house, having no regard to anything but the proper disinfection of the building.

January 16 we visited the rag-exporting establishment of Mr. J. Hastiere. This is a large establishment, their usual shipments being 15 tons a day. The proprietor informed us that it was not so much at present, because business was depressed owing to the stoppage of shipments to the United States, but that they were still sending rags to England.

Mr. Hastiere said that he had made but one attempt at disinfection, which was four weeks ago. There is a fairly good room connected with the establishment which could be readily converted into a disinfecting chamber, and which he said he would arrange just as the United States officials wanted, because it would be to his business interests to do so. He explained that the only attempt he had made at disinfection was by putting the rags on the floor in piles, as he had no racks, and that he put in one large iron pot containing sulphur; this method was certified to as fulfilling the requirements of Department circular, and the rags were sent to the United States. They employ 80 sorters at this place, and had never known of a case of contagious disease among them. In response to our question, he said that all the rags came from Belgium; that he imported none from foreign countries.

We next visited the rag establishment of Mr. Van Riel, which is somewhat smaller than the last. The proprietor conducted us at once to what he called the disinfecting room. He had arranged a series of movable racks, which he put up on "horses" in his main building, a room nearly 200 feet long by 40 feet wide and 12 feet high. One side of the room was full of bins for the rags, the other part being used by the workmen for packing, etc. The racks, he explained, were put up crosswise of the building, the rags put on them, and the sulphur ignited. He could not tell how many rags were put on the rack at one time, but "they were piled as full as they could hold;" nor did he know how much sulphur he burned at any time. It was apparent that under no circumstances could disinfection be properly carried out in this room in its present condition, as there were large doors opening from this part of the establishment into others equally large, while the broken window panes and the jointed tile roof permitted the fumes to escape as rapidly as they rose. We pointed out these defects to him, but he said that he was "not willing to make any other arrangements, for disinfection in this room is good enough."

As at the other establishments, we saw the sorters picking out "new cuttings" from among the old, filthy rags.

At the Hastiere establishment there were about 2,000,000 kilograms of rags then on hand ready baled for shipment. They had not been disinfected, and were to be sent to England. The inspection of these houses concluded the work of this character to be done in Belgium. In no sense is the disinfection carried out as it should



be; it is not in accordance with the regulations prescribed by the Treasury Department, and is unsatisfactory and useless at those places where it has been attempted. It is our conviction that the only way in which this work can be properly done would be under the supervision of inspectors appointed by the U. S. Government, who should devote their entire time to this work.

January 17 we left Antwerp for Rotterdam, arriving there at 6 p. m. On the morning of the 18th we visited the U. S. consul, Walter E. Gardner, and arranged for an interview with the Netherlands Steamship Company for the purpose of examining the boarding house which they have recently built for emigrants and the arrangements made by them for a disinfecting chamber in which to fumigate emigrants' baggage, etc. After perfecting these arrangements we made some inquiries of Mr. Gardner concerning the disinfection of rags shipped from his consular district. One point is of special interest.

While making our investigations in Ghent and the other places in Belgium we were told at each place visited that all the rags which they baled had been gathered in Belgium; at only one place was it admitted that rags came from a neighboring country ("a few small towns in the north of France"). The consul at Ghent had informed us, as already stated, that he required certificates of origin, in which the exporters stated under oath where the rags were gathered, and that he believed their statements made to him were correct, and that the rags came only from Belgium. While conversing with Mr. Gardner upon this subject, and without any intimation from us that we had conversed with anyone concerning the origin of rags, he related to us the experiences he had with rag exporters, and among other things said that he had recently corresponded with the U. S. consul at Ghent concerning the large exportation of rags from Holland into Ghent, and at our request he showed us his letter book and file of letters. We saw several letters from Consul Osborn in Ghent to Consul Gardner, in which Mr. Osborn stated that the rags referred to in a letter from Mr. Gardner (the receipt of which Mr. Osborn duly acknowledged) had been received from Holland and had gone to the rag establishment of Mr. Alphonse Van der Haege; that they were in loose bales and would be sorted and disinfected by him for shipment. The letters covering these statements were dated, respectively, November 23, November 24, and December 1, 1892, all the letters having been written immediately preceding our visit to Ghent. It is thus conclusively shown that the importation of rags from Holland into Belgium was known both to the U. S. consul at the date of our visit to him and to Mr. Van der Haege, whom, it will be remembered, assured us that all the rags baled in his establishment came from Belgium. In the letter dated November 3, 1892, Mr. Gardner wrote to Mr. Osborn that rags had been shipped from Rotterdam to Ghent; that they had been sent forward to avoid the restrictions imposed by the Department circular No. 143, and requested Mr. Osborn to look out for them. To this letter Mr. Osborn replied, under date of November 24, 1892, saying that he knew of 22 tons of rags which had been received by Mr. Van der Haege; that they were in loose bales, but that Mr. Van der Haege would sort them and disinfect them, and that he, Osborn, would personally see to the inspection of them. On December 1, 1892, Mr. Osborn wrote to Mr. Gardner that he had personally inspected the rags sent to Mr. Alphonse Van der Haege from the Netherlands, and that they had been disinfected before going to the United States.

Our investigations at Ghent, just related, show the fraudulent means practiced by Mr. Van der Haege to evade all methods of disinfection. Concerning the methods employed by Mr. Gardner to insure a proper disinfection of rags in this consular district, he stated that he employs an inspector who remains in the disinfecting chamber to see that the rags are spread upon the racks, in accordance with the requirements of the Treasury circular; that the inspector weighs the

sulphur necessary for fumigating each charge, the quantity being determined by the cubic capacity of the chamber; the inspector ignites the sulphur, closes and locks the door, and then places a seal given to him by the consul over the keyhole of the door leading into the disinfecting chamber, and which the inspector alone may break at the end of the six hours of disinfection. The rags are then taken out of the chamber in the presence of the inspector and put in an adjoining compartment, where they are packed in bales, the inspector being present during the entire process. After they are baled he fixes upon each bale a certificate signed by him that the bale has been properly disinfected under his immediate supervision according to the Department circular.

Under this plan it will be seen that from the time the rags are put into the disinfecting room until they are baled and the certificates attached they are constantly under the supervision of the inspector. As a guard upon the diligence of the inspector Mr. Gardner issues to him from time to time a certain number of seals which are to be placed over the keyhole leading into the disinfecting chamber; he also knows the maximum capacity of the chamber. The inspector is required to report at the consul's office from day to day, and he must at each visit bring all the unused seals in his possession; the seals which have been canceled indicate how many times the disinfecting chamber has been closed and, consequently, how many tons of rags have been disinfected. The shipping invoice is another check showing just how many bales have been shipped; the inspector's certificate, which in every instance is affixed to each bale, must tally with the number of bales mentioned in the invoice, so that each becomes a check upon the other; as an additional safeguard, the inspector is required to return to the consul all unused certificates of disinfection, which, when added to the number of certificates attached to the bales mentioned in the invoice, must tally with the original number of certificates issued by the consul; finally the inspector is required to make an affidavit as to the number of bales which have been disinfected and inspected, to which his certificates, bearing certain marks and numbers, had been affixed by him, which marks and numbers must be set forth in his affidavit. The shipper is also required to file independently his own affidavit, showing the number of bales shipped by him and which are named in the invoice, also setting forth that the rags have been disinfected, that they are in a wholesome condition, to whom they are shipped, and through whose hands they are forwarded. Thus the number of seals placed over the keyhole of the disinfecting room must tally with the number of inspector's certificates attached to the bales, the inspector's affidavit must tally with the shippers affidavit, and all must tally with the invoice. In order to complete the inspection Consul Gardner assured us that he makes frequent personal visits to the disinfecting establishment and keeps himself fully informed of all details.

The seal issued by the consul to be placed by the inspector over the keyhole of the door leading into the disinfecting chamber is the impression of the consular seal used in this consulate, and is affixed over the keyhole by mucilage. If the seal is broken by any person other than the regularly appointed inspector the room is opened by the inspector, new sulphur put into the iron pots, the room closed again for six hours, and a new seal put over the keyhole. The certificate attached to each bale is as follows:

CONSULATE OF THE UNITED STATES,  
*Rotterdam, Netherlands.*

The ——— contained in this package, marked or numbered ———, have been duly disinfected under my supervision in accordance with process No. 3.

\_\_\_\_\_  
*Sanitary Inspector.*

Label No. —

## CERTIFICATE OF INSPECTION AND DISINFECTION.

I, ———, United States sanitary inspector at Rotterdam, Netherlands, do hereby certify that the ——— mentioned in invoice No. ———, hereto annexed, to wit, ——— bales marked ———, and bearing upon each bale inspector's certificate, have been disinfected by exposure, under my seal, to sulphurous acid gas for a period not less than six hours, in accordance with process No. 3, prescribed in circular No. 143 of the U. S. Treasury Department, dated August 19, 1892.

Attest:

—————,  
*Sanitary Inspector.*

ROTTERDAM, NETHERLANDS, ———, 189 .

## CONSULATE OF THE UNITED STATES OF AMERICA,

*Rotterdam.*

I, Walter E. Gardner, consul of the United States, do hereby certify that the above is the true and genuine signature of ———, and that he was on the date of signing the foregoing certificate authorized to superintend the disinfection of ———, intended for shipment to the United States of America from the port of Rotterdam. Dated at Rotterdam, Netherlands, this ——— day of ———, 189 .

In testimony whereof I have hereunto set my hand and affixed the seal of the consulate at Rotterdam, this day and year next above written.

—————,  
*Consul of the United States.*

We then visited the disinfecting establishment of S. E. Cohen, of Rotterdam, accompanied by Mr. Gardner, which is the only establishment of the kind here. It is a large place, and at the date of our visit was capable of disinfecting about 150 tons a week. It is a brick structure, practically air-tight, having no windows or openings except the door and a flue through which the fumes may escape when opened after the disinfection is completed. The iron doors in front are provided with broad flanges, so adjusted that when closed they prevent the escape of the fumes. The ceiling is constructed of iron beams, with brick arches turned between the girders. In the chamber there are a number of iron racks set upon wheels, so that they may be easily rolled about. Each of these movable racks is composed of four tiers, one above the other, and about 2 feet apart. The rags are scattered loosely over the racks, which are made of iron wire (about a 2-inch mesh), when they are rolled into position. At a suitable place near the door of the disinfecting chamber there is a depression for the sulphur pot, arranged so that the inspector may be sure that the sulphur is thoroughly ignited before closing and sealing the room. The doors are then closed, locked, and a seal placed over the keyhole by the inspector, and the rags left in the fumes for six hours. At the end of this time the inspector breaks the seal, unlocks the door, and the movable racks are pulled out, rolled into an adjoining room, where the disinfected rags are removed and the racks recharged and returned to the disinfecting chamber, where this process is repeated. The present chamber is of sufficient capacity to allow the disinfection of 150 tons per week in a proper manner. The room was not large enough, however, to enable Mr. Cohen to supply his orders, and he obtained the necessary municipal permit to enlarge the chamber. He had nearly completed the work when the order came prohibiting the importation into the United States of all rags, and the unusually cold weather of this winter stopped the work. At our request Mr. Cohen furnished us with a copy of the plan of the new disinfecting chamber, which is here appended. (See p. 432.) Mr. Gardner



informed us that the proprietor, Mr. Cohen, had promptly complied with all the regulations which he had established to insure the proper performance of disinfection required by the Treasury Department.

The room was not in use on the day of our visit, owing to the late order of the Treasury Department forbidding the importation of rags into the United States.

With the completion of the new part the output of the establishment would be 400 tons per week, and this represents about the regular output from Rotterdam. At this date rags are not permitted to enter England direct from the Netherlands, but they are first shipped to Ghent, where it is alleged they are disinfected; then they are reshipped to England and from thence to the United States. In view of the fact that rags are so thoroughly disinfected at this place, it seems to be an injustice to stop shipments from Rotterdam while they are permitted from ports where there is no pretense of disinfection. The underhand methods which are practiced by so many rag exporters, and which are generally known to all of them, but which are unnoticed by those officials having authority to check and punish the delinquents, operate as an inducement for all to violate United States regulations. In one sense it is putting a premium upon illegitimate methods; and the stoppage of shipments of rags from Rotterdam, notwithstanding the efficient methods of disinfection which had been devised by Consul Gardner, had this effect, as the following communications show:

*"To Drs. Kempster and Irwin, Medical Commissioners, U. S. Treasury Department, Berlin.*

"GENTLEMEN: I beg to communicate to you, for whatever use you may choose to make of it, information as follows: Since the date of your visit in this city, Netherlands rags have been regularly shipped to England, whence they have been and are being reshipped to the United States as English rags. Rag men at Ghent, according to admissions made by themselves to rag dealers in this city, are now shipping Ghent and other Belgium rags to Dieppe, from which port they are sent to the United States as Dieppe district rags. At this moment the principal rag exporter of Rotterdam is in Bremen for the purpose of perfecting arrangements whereby Netherlands rags may be shipped to the United States via Bremen as German rags.

"The facts thus cited speak for themselves.

"I may take the liberty in this informal note to remind you (and I speak out of very recent personal experience) that it is demoralizing to the business and destructive of the efficiency of this or any other consulate when shippers are able to boast, as are the shippers of this port at the present time, that they can flagrantly disregard the sanitary regulations of the United States authorities, and those authorities can't help themselves.

"I am, gentlemen, very truly, yours,

"WALTER E. GARDNER."

The second communication contained the following: "Some recent interesting developments concerning rags I now note for your information, as follows: On Tuesday last I learned that J. Hastiere, rag exporter of Antwerp, and Mr. Van der Haege, at Ghent, had received cable advice from New York that the prohibition of rags into the United States had been intermitted for the space of one month; that the exporters above named were buying extensively; that they had contracted space for considerable shipments per Puritan Line steamer (Thomas Runnalsen & Co., agents) to sail from Antwerp for New York on February 15.

"Having circumstantial statements as above, I communicated with Mr. Lincoln, consul at Antwerp, who replied, 'My instructions unchanged; rag shipments still prohibited;' also with Consul-General King, Paris, who replied: 'All rags except new cuttings prohibited.' Then I asked Cohen & Co. of this city to

telegraph J. B. Cummings & Co., the representatives in London of Train, Smith & Co., for whatever new information they might possess. Cumming & Co. have sent the remarkable reply that the order of prohibition has been rescinded but only to the extent of permitting the entry of rags from Belgium. I submit the matter to you as it has come to me with the following inclosure, and am

"Yours very truly,

"WALTER E. GARDNER,  
"Consul of the United States."

[Inclosure.]

"U. S. CONSULATE,  
"Antwerp, February 10, 1893.

"Hon. WALTER E. GARDNER,  
U. S. Consul, Rotterdam:

"DEAR SIR: I have this day received a letter from the U. S. consul at Ghent containing copy of telegram to the following effect: 'Washington, February 9, 1893. Treasury decided rags from Belgium admitted until March 23, 1893, must be accompanied by consular certificate of disinfection as described in Treasury circular 143, August 19, 1892, and also by affidavit of consignor authenticated by consul that rags do not come from place where cholera is prevalent. Inform other consuls in Belgium. (Signed) Wharton.'

"Very truly, yours,

GEORGE F. LINCOLN,  
"U. S. Consul."

This dispatch, sent from Washington to the consul at Ghent, was dated more than six weeks after our cablegram, and written reports were sent from Ghent to the Surgeon-General of the Marine-Hospital Service (dated December 21, 1892) detailing the total and intentional disregard shown to the requirements of circular No. 143, Treasury Department, and notifying him that rags were being shipped in large quantities from cholera-infected countries, via Ghent, to the United States.

After completing the inspection of the Cohen disinfecting establishment we went to the office of the Netherlands American Steamship Company, Rotterdam, according to appointment, and there met Mr. Otto Reuchlin, Mr. J. V. Wierdsma, directors, and Mr. J. Wilmlink, general passenger agent. We had a lengthy interview with these gentlemen concerning the disinfection of baggage, etc., and arranged to go with them early the next morning to inspect the several establishments which they have recently constructed.

January 20, in accordance with the previous programme, we went to the new "emigrants' hotel" built by this company and now nearly completed.

It is a substantial brick structure, provided with plain but modern appliances for lavatory and bathing purposes; it is lighted by electricity, warmed and thoroughly ventilated, and provided with fire escapes; it will accommodate, when finished, about 500, and its locality is such that the company can keep all the inmates isolated from the city. It is supplied with reading rooms, sitting rooms, café, and the usual conveniences of modern hotels. On arriving at this establishment each emigrant is furnished with a card, planned so that the day and hour of arrival may be punched out. The number of members of his family and the quarters assigned to them in the house are marked on the diagram. They are permitted to remain in the lodging house as long as it may be necessary for them to do so.

A short distance from this building there is a plain wooden structure designed for an independent bathroom, disinfecting chamber, and small hospital, into which people with contagious diseases may be immediately transferred until the form of disease is determined, and the necessary arrangements made to send them

to the proper hospital. Emigrants arriving who are unusually dirty will be compelled to bathe first in the outside establishment before being assigned quarters in the hotel, which is supplied with the ordinary bath tubs.

The hotel, bath house, and hospital are so planned that they may be flushed out and the floors and walls washed with water thrown through hose. The building is under the immediate supervision of the steamship company, and will not be leased or rented. One of the company's officers will reside in the building as manager. It will be visited by a surgeon employed by the company at least every day and oftener if necessary. The general plan of the establishment is such that it is made to conform in some respects to the conditions of life on shipboard, to some extent accustoming the emigrant to the sea life which he is about to undertake.

From this place we went to the company's docks, where they have built a chamber for disinfecting baggage either by steam or sulphur. The officials informed us that it was their purpose to do everything that could possibly be done to prevent sickness on shipboard, because that was mere business precaution, if they had no higher motive in view.

After a full discussion of the subject, they said that if the other continental steamship lines agreed to do so, they would join in the proposed method to establish disinfecting plants in the United States, heretofore described. They said that they believed this plan would be most satisfactory and in their opinion would meet with the full support of all steamship lines.

In response to our question they said the laws of the Netherlands would permit baggage sent in bond for shipment to be opened for the purpose of disinfection, if this was done in the presence of the custom-house officials. They estimated at the present time that 40 per cent of the baggage which they handled came to them in bond.

They explained that the law of Holland permitting baggage to be opened was entirely different from the Belgian laws above mentioned. The officers of the Netherlands Company, as well as others to whom we have mentioned the subject, express themselves as much pleased with the prospect of the passage of a law by the United States establishing a national quarantine, for the reason that they would then know what the regulations were for the entire country.

It was their opinion that should cholera reappear this summer the movement of emigrants would be interdicted by continental governments until it ceased, but whether this was done or not it would be the policy of the Netherlands Company to comply promptly with all regulations made by the U. S. Government to prevent the introduction of contagious diseases.

This company has been disinfecting externally for some time the baggage of emigrants going to the United States. We stated to them that external disinfection alone would not be satisfactory to the United States authorities, and that it would be necessary to remove the contents of boxes, etc., to make the disinfection thorough; they replied that this would be done whenever the Government of the United States required it. Consul Gardner, who was present at the interview, stated that the companies had told him they would cause the disinfection of the contents of all trunks and boxes whenever he requested them to do so, and that they are prepared to do it at this time if necessary.

All vessels sailing from Rotterdam, before they leave port, are thoroughly disinfected or fumigated under the supervision of a practical chemist appointed by the U. S. consul and subject to his orders. He goes on board, and for the time being assumes charge of the vessel, and, with a crew of men, washes the sides and woodwork with solutions of creolin or corrosive sublimate, and then disinfects or fumigates the hold and all other closed places. This is done to every vessel, whether carrying passengers or not; even petroleum tank ships sailing from here to the



United States are thus cleansed and fumigated. After the disinfection the chemist makes an affidavit which, being first certified by the consul, accompanies the ship, and a duplicate is filed with the U. S. consul.

At the request of Consul Gardner, the Netherlands Steamship Company prepared a blank form which is to be filled out by every steerage passenger going to the United States, to be delivered to the commissioner of emigration at the port where they land. Mr. Gardner requires a full roster of all steerage passengers to be delivered to him before issuing a bill of health to the ship. He also requires that before going on shipboard every emigrant shall be examined by two physicians nominated by him; and that any person turned aside by the physicians for further examination can not go to the United States until a complete physical examination shows that the person so held is in good health. After the steerage passengers have been examined, the physicians sign the roster, and Consul Gardner appends his certificate as to the genuineness of the physicians' signatures. In addition to this examination the steamship company are required by Netherland laws to have all emigrants examined by competent physicians before they sail, and the ships are also inspected by Netherlands officials to see that everything thereon conforms with the law.

While engaged in inspecting the Netherlands Steamship Company docks we saw in one of the warehouses a large quantity of hides which had been sent from Russia, awaiting shipment to the United States.

We were told that they had been disinfected and certified to by some American consul in Russia, whose name could not be ascertained. They were packed, six hides in each parcel, and branded "Russia." There was no mark upon them to indicate that they had been disinfected. In this connection Mr. Gardner told us that a short time since a man came to his office and said that he had in midstream a cargo of wool which he had just brought from Russia and requested Consul Gardner to issue the necessary papers to admit the wool into the United States. This Mr. Gardner declined to do. The man said that the wool had been disinfected in Russia, but that he had touched at various places for supplies, and insisted that Mr. Gardner should give him a new certificate. Mr. Gardner told him that all he could do would be to certify as to what he, the shipper, had told him, and nothing further. He also informed this man that he did not think the wool would be admitted into the United States under any circumstances. The man then went away and nothing further has been heard of him.

The following are the blanks issued by the Netherlands Steamship Company, at the suggestion of U. S. Consul Gardner, relative to emigrants sailing from the port of Rotterdam to the United States, together with a card supplied by the company to each person who occupies a bed in their hotel:

#### CERTIFICATE OF DISINFECTION OF STEAMER.

I, Dr. ———, a duly licensed chemist of the city of Rotterdam, do hereby certify that I have this day personally supervised the disinfection of the steamship ———, of ———, about to clear from Rotterdam for the port of ———, in the United States; that all water-closets and open spaces of said steamship have been fumigated with chloride of lime and carbolic acid; that all walls and exposed surfaces have been washed with a 3 per cent creolin solution; that there has been throughout a thorough cleansing and flushing with water; and that the said steamship is, on this date, free from suspicion of infection, and is, in all respects, in good sanitary condition.

Dated at Rotterdam, this ——— day of ———, 189 .

\_\_\_\_\_,  
*Licensed Chemist.*

## MARINE-HOSPITAL SERVICE.

CONSULATE OF THE UNITED STATES OF AMERICA.

*Rotterdam.*

I, Walter E. Gardner, consul of the United States, do hereby certify that the above is the true and genuine signature of ———, and that he was, on the date of signing the foregoing certificate, authorized to superintend the disinfection of steamers clearing for ports of the United States of America from the port of Rotterdam.

Dated at Rotterdam, Netherlands, this ——— day of ——— 189 .

In testimony whereof I have hereunto set my hand and affixed the seal of the consulate, at Rotterdam, this day and year next above written.

Consul of the United States.

Steamship——. Contract No. ——. List No. ——. Name in full,———. Age,——. Sex,——. Calling or occupation,———. Read and write,——. Native country,———. Last residence,———. Intended destination, State or Territory,———. Transient, in transit or intending protracted sojourn,———.

| Names in full. | Age. | Sex. |
|----------------|------|------|
|                |      |      |

I, ———, hereby certify to the Netherlands American Steam Navigation Company, at Rotterdam, that I desire to go to the United States of America, and further declare that I am ———, a citizen of the United States, resident at ———, a resident at ———, in the State of ———, United States, a tourist going to ——— in the State of ———, United States, in order to visit ———, who resides in the city of ———, in the State of ———, United States, and that it is not my intention to remain in the United States, but that I desire to return to my native country, ———, within a reasonable time.

The \_\_\_\_\_ of a \_\_\_\_\_ at \_\_\_\_\_, in the State of \_\_\_\_\_, United States, and am accompanied by my \_\_\_\_\_ children.

And I do solemnly declare that the above statement is true and correct.

Dated at Rotterdam, this — day of —, 189 .

(Signature) \_\_\_\_\_.

The following is the hotel card used:

[Front of card.]

|  |  |  |
|--|--|--|
|  |  |  |
|--|--|--|

Saloon No. —

BED NUMBERS.

[illegible]

[Back of card.]

## HOTELKAART.

Deze kaart te bewaren en op aanvraag te vertoonen.

Diese Karte ist aufzubewahren und auf Verlangen vorzuzeigen.

This card must be kept and shown if required.

Cette carte doit être gardée et présentée sur demande.

Te kartę niechaj każdy przy sobie zachowa by ja na żądanie mógł okazać.

Ten listek se usková á na požadaní se ákáže.

Ez a kártyát kel megtartazni és a tudakazódásrá elémutatni.

Detta kort är till uppbewaring för att framvisas när det begäres.

Dette kort maa forvares og fremvises naar det forlanges.

Dette Kort maa opbevares for at fremvises naar det forlanges.

Este billete se debe guardar y mostrar cada vez cuando esta pedido.

Questo biglietto deve essere conservato e mostrato al demando.

## CHOLERA IN ROTTERDAM.

At the date of our visit we found the city very dirty. The numerous canals then frozen over showed the unsanitary condition of the place. All along the canals, lying upon the ice, where they had been thrown or swept, were piles of refuse material, decaying fruit, and vegetables, decomposing meat or fish, and the snow, mud, and filth which were swept from the streets. When the ice melts this refuse falls to the bottom, preparing soil for the nourishment of disease germs; the branch canals are beyond the influence of the swift running Maas and this material can not be swept out by the stream. Lying in the canals are hundreds of boats, each one the home of a number of people who live in them during the winter months, ice-bound.

The sewage and general refuse from them are also thrown into the canals. In general the canals are at the backs of the houses and shops and are made the receptacle for the sweepings and general dirt which accumulate in them; under these circumstances the conditions must invite disease. The sanitary authorities do not prevent these unwholesome proceedings, which seems all the more remarkable as there are at this time cases of cholera in the Netherlands not far from this city.

The first case of cholera was officially reported to Consul Gardner by the burgo-master September 7, 1892; the official report gave the street and number of the house where the case occurred; the last case was reported November 19, 1892; total number of cases, 34; total number of deaths, 23; highest number of cases reported in one day 9, and on the same day occurred the greatest number of deaths, 8. The mortality was very high; all the cases occurred among laboring men or boatmen employed on the canals.

We were informed that the Netherlands law provides that when a case of cholera is known to exist, the person attacked must be taken immediately to the cholera barracks, erected outside of the city; every article of furniture, bedding, or clothing must be burned, and the house thoroughly disinfected and fumigated; the walls and woodwork must be washed with a solution of corrosive sublimate. While the law provides for burning the movable articles in the house, it is rarely done.

It is the opinion of the health officers and others with whom we conversed that there will be a renewal of the disease with the coming summer.

When the cholera made its appearance on the Continent last year the Netherlands Steamship Company placed large placards about their docks and yards notifying their workmen that any employé drinking the river water would be instantly dismissed; and under no circumstances would be employed again. From that time until the present they have furnished their employés with tea or beer, and they have provided large Pasteur filters on the grounds and steamers for the use of all employés.



Sunday, January 22, we left Rotterdam for The Hague, and the next morning called upon U. S. Minister Thayer and requested him to procure for us all official documents which had been issued by the Netherlands Government concerning the importation of rags; also, any documents relating to cholera and its prevention. During the past season there were but very few cases of cholera at The Hague, and it did not appear to attract much attention. A recent royal order relating to rags is as follows:

[From the royal order of July 13, 1892.]

ARTICLE 1. The importation, transit, and removal of rags, old clothes, and unwashed underclothes and bedding is prohibited from such countries and places as the ministers of the interior and finance shall indicate.

The indication of such places shall appear in the *Staats-Blad* at least three days before the prohibition takes effect.

The aforementioned ministers are authorized to amend their notices in this regard as often as circumstances demand; also, to make all arrangements affecting passengers' baggage, giving notice thereof in the *Staats Courant*.

ART. 2. This order shall go into force fifteen days after the date of printing in the official organ in which it appears, and shall continue in force for the period of one year.

(Signed)

EMMA.

January 24 we left for Amsterdam, and on the morning of the 25th visited U. S. Consul Schlier, who said that there had been but two shipments of rags direct to the United States since Department circular 143 went into effect, but that quite a large quantity of "old bagging," "cotton waste," "new cuttings," and "old paper" had been sent, as the Treasury Department did not demand that they should be disinfected. There are two rag-exporting houses here, Vreeman & Co. and Gomperts Bros. There are a number of small dealers, but their stock generally goes through the hands of the firms above mentioned.

Vreeman & Co. have a small disinfecting room which was recently built and has been used but once. In company with Consul Schlier we visited it; the disinfecting chamber is a rudely constructed affair, built of rough boards, and by no means tight; it is about 20 feet long, 10 feet wide, and 12 feet high; inside there are four tiers of racks placed about 2 feet above each other; at the time of our visit the room was crammed full of filthy rags, emitting a horrible odor. The proprietors say that they ship about 3,600 tons a year; that they now have on hand 3,000 tons accumulated during the winter, which would now be forwarded to England, as the restrictions had been this day removed. We were told that all these rags came from the Netherlands. They do not sort rags as thoroughly as some other exporters, preferring to sell them in bulk; "new cuttings," "flax waste," "cotton waste," "bagging," and the technical "rag" all mixed together and forwarded to "Ghent, Hull, London, and the United States." There are at this place three warehouses four and five stories high, filled with rags, and the proprietor told us that he had recently rented others in the vicinity which were also full; the whole establishment was extremely filthy and the foul odors proceeding from it could easily be detected more than a block away. We next visited the establishment of Gomperts Bros., and, if it is possible, this place was filthier than the last; here we found immense piles of rags exposed to the rain, wet, and giving off a dank, offensive smell.

They have what they chose to call a disinfecting chamber, an old, tumbled-down rookery behind the warehouse, with hardly a whole pane of glass in any of the windows; cracks an inch or more wide between the boards, a large hole in the roof, and, of course, utterly useless for the purpose of disinfection.

Consul Schlier said that he had refused to give Gomperts Bros. certificates of

disinfection because they had failed to comply with the Department regulations, but that the rags were sent somewhere without certificates. In response to our inquiries, Mr. Gomperts said, that they could disinfect about 200 tons per month; that they would prefer to send them direct to the United States rather than to London, because at the latter place they could sell only small invoices, but they could send a cargo at one time to America. He said that at present they could not send rags direct to the United States on account of the restrictions; but, he stated very frankly, that his rags were sold to dealers in Ghent or London and that they were shipped to the United States, as Belgian or English rags; he also said that they were receiving rags from Germany. The only restrictions upon rags from Germany at present were that they should not come by way of Hamburg, so they are shipped around that city and brought here, and from here reshipped to Ghent or London; he said that he sent some rags to Bremen, because there were no restrictions upon the shipment of rags from that port at this time.

Mr. Gomperts informed us that the restrictions which had hitherto prevented him from sending rags to England had been this day rescinded. Upon again questioning him as to where his rags came from, he replied, only from the Netherlands, apparently forgetting that he had previously informed us that he was receiving shipments from Germany. Later, Consul Schlier said that he had been informed, by a person whom he considered entirely trustworthy, that Mr. Gomperts had recently perfected arrangements to send rags to the United States via Trieste, but that as rags were now being shipped from Bremen, which port with Trieste had been left open for the shipment of rags to the United States according to instructions received from the U. S. Treasury Department, he supposed they would go via Bremen. Mr. Schlier said that Gomperts Bros. had once asked him for a certificate of disinfection for an invoice of rags which had not been disinfected, and which the consul declined to give. Mr. Gomperts told him that his refusal would make no difference, because the rags would be shipped anyway, and, said Mr. Schlier, I know that they went, but I do not know how. He said further that the whole business was conducted in a tricky manner, and in his opinion the only way for the United States to protect itself from the importation of undisinfected rags would be to adopt some method which could be supervised by an official who was directly responsible to and under the control of the consul.

The last shipment of rags from Amsterdam was made December 27, 1892, and went to Boston, via Hull, on the steamer *Europa*. There were 451 bales in the invoice.

Mr. Schlier's books show that on November 15, 1892, Gomperts Bros. sent to A. Cohen, London, en route to New York, 104 bales of rags which had not been disinfected.

The Mr. Cohen spoken of is the man who told us when we visited his place in London that he received no foreign rags, and that all the rags he sent to the United States were gathered in England. We saw the invoice covering this shipment to Cohen. These rags had undoubtedly been gathered in the Netherlands, or in Germany, during the summer or autumn months, and at a time when cholera was prevalent in those countries. They were not disinfected, but were sent forward accompanied by a certificate, verified before the consul-general of London, that they were English rags, and that there was no cholera or other infectious disease prevalent at the place where they came from.

The consul's books also show that Gomperts Bros. shipped to Atterbury Bros., of New York, on the 20th of December, 1892, 28 bales of old paper said to have been taken from the municipal building in Amsterdam and which was bought as old paper. The material was taken to this filthy establishment, where it was packed for shipment to New York.

At Oldenzaal, a town within this consular district, there is another exporter of rags, H. M. Cohen, who had recently shipped to San Francisco, on the sailing vessel *Maraval*, 320 bales of what is technically known to the trade as "cotton waste." This cargo was shipped via Antwerp. Zutphen, also within this consular district, ships large quantities of "old bagging" to the United States. Neither this nor the cotton waste is disinfected, because the trade nomenclature does not class either of these commodities as "rags." The "old bagging" is generally the receptacle used by the small dealers in which to pack and send to the exporters the rags which are gathered from the small places.

At Almalo there are some dealers who export rags to the United States, but their invoices are not authenticated at this consulate, and Mr. Schlier does not know the means used to get them out of the district.

On the 19th of September last, an invoice of 106 cases of rabbit skins came from Paris to Amsterdam consigned to E. Moussel, New York. There was no certificate of disinfection with them, and the consul decided that they must be disinfected here before he would send them forward. This was done. A few days after they had gone a certificate came to Amsterdam from Paris signed by one "Bouyer" purporting to have been legalized before Robert M. Hooper, vice-consul-general at Paris, dated September 15, in which it was stated that the goods had been disinfected in Paris. If it is true that the goods had been disinfected as alleged, it would seem that there had been great carelessness somewhere in neglecting to send the certificate of disinfection with the goods at a time when cholera was prevalent in France as well as in the Netherlands; and it seems a suspicious circumstance that goods should be sent from Paris to Amsterdam for shipment to the United States when there are several ocean ports so much nearer to Paris.

Hides are disinfected here in bulk, the original packages not being opened. They are put into the hold of the boat, the hatches covered by tarred cloth, while they are fumigated by sulphurous acid gas. During the prevalence of the epidemic of cholera there were municipal regulations prohibiting the importation of rags into Amsterdam from adjoining countries, but they are now suspended and rags are coming in again from all quarters.

#### CHOLERA IN AMSTERDAM.

The first death from cholera was officially reported to the consul on September 3, 1892, on which day two people died of this disease. The last death reported was on November 26. The total number of deaths was 18. The disease was confined almost exclusively to the canal boatmen or to the workers on the wharves. The canals are made the receptacles of all the filth of the city. Street sweepings, garbage, and even the sewers empty directly into them. The water in the canals is sluggish; in but few is there a perceptible current. It would seem that every effort had been made to invite disease because of the unsanitary conditions, but it is said that the death rate of Amsterdam is small. January 24, we prepared an abstract from our notes and sent it, with a cablegram, to the Surgeon-General of the Marine-Hospital Service, concisely setting forth the conditions found since our last report, of January 8, 1893.

While in Amsterdam we obtained the text of the certificate which must be sworn to before a British consul before rags can be shipped into England. The following is the form:

I, ———, hereby make oath that the bales of rags marked ——— are of Amsterdam origin and that no part thereof has been brought from any other district.

(Sworn to before the British consul.)

In spite of the certificates required by both the British and American Governments, showing the origin of the rags, our investigations show that rags which



have been gathered in all countries of Europe are sent as having originated in the place where the certificate is drawn.

January 26 we visited the offices and docks of the Netherlands Steamship Company, accompanied by Mr. J. Roussing, the agent here.

At the present time the company has no disinfecting room for baggage, but has fitted up a cabin upon one of the lighters, so arranged as to admit steam from the boiler of a tug or other steam vessel. Mr. Roussing said that it answered quite well for a temporary arrangement, and as most of the immigrants would hereafter sail from Rotterdam they had decided not to build a disinfecting room at this place. The present arrangement answer temporarily, but should there be any considerable shipment of emigrants' baggage from here, it would be inadequate. He said that they had disinfected bedding, etc., by opening the packages, but the boxes and trunks had been put into the disinfecting chamber unopened, which they had hitherto thought sufficient. The leather goods, and such material as steam would spoil, they put into freight cars standing on the side tracks, and disinfected them with sulphur; in the same manner they disinfect hides coming to them from Germany, but without opening the package. At the present time there are three steamships a week coming to Amsterdam from Hamburg, and one from Bremen. He also stated that many rags came from Hamburg but he was not sure that they were coming at this time; it was a matter of common remark among rag exporters that rags shipped to Ghent could be forwarded either to England or the United States without difficulty.

The boarding houses in which the emigrants remain prior to sailing are under the immediate control of the steamship company and are frequently inspected by their officers. Those which we saw were clean and comfortable. The charge to emigrants is 1 gulden (40 cents) per day, which includes room, food, and bath. Unmarried women going to the United States are not allowed to sit at the common table, but have meals served in their own rooms. Before the emigrants are permitted to go on shipboard they are inspected by officials of the Netherlands Government. The examiners include two physicians who are employed by the Government, and there is also present one of the company's surgeons. All persons found ill, or too feeble to make the voyage in safety, are returned to their homes or retained in the company's lodging houses until strong enough to make the journey.

January 27 we left Amsterdam for Bremen, reaching the latter place at 8 p. m., and the next morning we called at the office of U. S. Consul Hugo Starkloff, who explained to us the effort which had been made at this place to prevent persons who were inflicted with contagious or infectious diseases from going to the United States.

In April, 1892, Consul Starkloff, who is a physician, requested the North German Lloyd Steamship Company, whose vessels sail from this place, to cause a more thorough examination of intending emigrants than had hitherto been made. His reason for this request was, he said, that he believed that he had seen some cases of leprosy, lupus, and other contagious diseases go on board the vessels bound for the United States, and that a superficial examination would not reveal the true character of the disease. The directors of the company at once requested Consul Starkloff to engage the services of two eminent physicians who would assist in carrying out this work, which he did at once; thereafter, whenever emigrants arrived they were taken into rooms especially fitted up for the purpose by the company and thoroughly examined, generally in Consul Starkloff's presence. This had been going on for some time, when the rapid spread of cholera became alarming, and Consul Starkloff requested the directors of the company to issue further regulations, which they promptly did. In brief, these are as follows:

The company furnished Consul Starkloff with a list containing the names of all

persons at whose houses the emigrants remained prior to sailing; the regulations required that immediately upon the arrival of an emigrant at any house the fact was to be reported by the proprietor to the consul's office. At noon every day one of the physicians employed comes to the consul's office and receives a list of the boarding houses in which the new emigrants are to be found, and the physician proceeds immediately to the several houses to inspect their sanitary condition, this being independent of the physical examination above mentioned. It soon became necessary to employ a third physician in order that this work might be thoroughly carried out. At the request of Consul Starkloff the boarding houses were required to put in bathrooms and modern water-closets. Those who failed to comply with this request, were stricken from the list and not permitted to receive emigrants. All emigrants coming from countries where cholera is known to exist are kept at the boarding houses at least one week before they are permitted to sail; meantime the physical examination is made and the clothing disinfected. At the physical examination each person is given a ticket which states the physical condition of the emigrant. If rejected by the physician the reason of rejection is written upon the ticket; also whether the rejection is temporary or permanent. These examinations were commenced in April and the disinfection of clothing in June, 1892.

As a result of this method the following statistics furnished by Dr. Starkloff are interesting, showing the care which must have been taken in making the examinations. The statistics embrace the period from April 8 to December 31, 1892:

|  |        |  |    |
|--|--------|--|----|
| Total number examined .....                        | 82,351 | For illegal pregnancy .....                        | 67 |
| Total number rejected .....                        | 1,352  | Unmarried women with children<br>rejected .....    | 46 |
| Number rejected for acute af-<br>fections .....    | 204    | For marasmus .....                                 | 4  |
| Number rejected for contagious<br>affections ..... | 276    | For tuberculosis other than con-<br>sumption ..... | 8  |
| Number rejected for heart dis-<br>ease .....       | 2      | For blindness .....                                | 5  |
| Number rejected for consump-<br>tion .....         | 7      | Deaf and dumb .....                                | 5  |
| Number of cripples rejected .....                  | 227    | Corneal ulcers .....                               | 2  |
| Number of idiots rejected .....                    | 3      | Epilepsy .....                                     | 1  |
| Rejected by reason of old age .....                | 469    | Tumor of the neck .....                            | 2  |
| Number of cases of lupus re-<br>jected .....       | 22     | Sclerosis .....                                    | 1  |
|  |        | Glaucoma .....                                     | 1  |

Of the whole number rejected 880 were returned to their homes; the others were sent to appropriate hospitals in the city, and upon complete recovery they were permitted to resume their journey to the United States. It appears that this method of examination is as nearly perfect as could be expected and demonstrates the value of having a competent medical officer responsible to the U. S. consul at every large port of embarkation. To properly carry out this system of examination a series of blanks has been arranged.

The following poster is conspicuously placed in each hotel to which the incoming emigrants are sent and is printed in seven languages:

A law of the United States of America prohibits emigration of the following persons:

1. Without any means whatever.
2. Incurables.
3. Cripples.
4. Weak from old age.
5. Prostitutes.
6. Criminals.

All emigrants upon landing in America are carefully examined. All those found disqualified are returned by the next steamer; even those found to be disqualified within two years from date of landing may be returned. It is therefore in the interest of the emigrant to pass a medical examination before departure.

This medical examination takes place every evening, except Sunday, at the depot of the North German Lloyd, the women, girls, and children at 6:30 p. m. and the men at 7:30 p. m. on the night of their arrival in Bremen.

When examined each emigrant receives a certificate, without which nobody will be allowed to step on board. The emigrants arriving only on the eve of embarkment must report the next morning one and one-half hours before the time of the express train at said depot to receive their certificates. Emigrants taken sick on the way to Bremen or during their stay there must await recovery before they will be allowed to embark.

Dr. VON STARKLOFF,  
*U. S. Consul.*

NORTH GERMAN LLOYD,  
*Bremen, April 11, 1892.*

After the examination, all those found free from disease are given a certificate, as follows:

Examined and found healthy.

Dr. Med. HAHN.

If for any reason the emigrant is temporarily rejected the person is furnished with a yellow certificate, as follows:

BREMEN, ———, 189 .

Name of person rejected ———.  
Place where from ———.  
Hotel in Bremen ———.  
Temporarily rejected on account of ———.  
Number of passenger ticket ———.

—————,  
*Medical Inspector.*

If permanently rejected they are given a red certificate and then returned to their homes. The yellow certificate is given for acute diseases; the red for chronic diseases and all the disqualifying causes named in the law governing immigration into the United States.

BREMEN, ———, 189 .

Name of person rejected ———.  
Place where from ———.  
Hotel in Bremen ———.  
Totally rejected ——— on account of ———.  
Number of passenger ticket ———.

—————,  
*Medical Inspector.*

All emigrants found to be suffering from a form of disease requiring immediate treatment are sent to the health office of the city with the following form, filled up and signed by the examining physician:

Medical examination, as required by the consul, of emigrants at the depot of the Lloyd Company.



*To the Board of Health, City:*

The following case of sickness, required to be reported, has been found by the medical examination:

Given and surname ———.

Age ———.

Residence and country ———.

Hotel in Bremen ———.

Kind of sickness ———.

BREMEN ———, 189 .

The following regulations have been issued by the board of health of the city of Bremen, concerning Russian emigrants, and they are rigidly enforced:

RULES FOR THE MEDICAL EXAMINATION OF RUSSIAN EMIGRANTS.

*A. At the depot.*

1. Russian emigrants arriving in large bodies at the depot are placed under medical supervision until further orders.

2. All Russian emigrants arriving in large bodies must undergo a medical examination before leaving the depot.

3. Dr. Emil Janson, Faulenstrasse, No. 28, and Dr. Bockhorn, Sögestrasse, No. 23, are charged with this medical examination.

4. One of these physicians (depot physicians) must be at the depot for the 8:45 a. m. and 10:45 p. m. trains, and conduct the examinations.

5. In case a body of Russian emigrants arrives on any other train, the depot police must immediately send for one of the physicians. If none of them can be found, some other physician living near is called to conduct the examination of the emigrants.

6. The Russian emigrants, after leaving the train, must be held together on the platform by the police and the officers of the bureau of information until the other traveling public have left the depot.

7. An interpreter must inquire whether anyone has suffered on the road with vomiting or dysentery. The reply must be communicated to the depot physician.

8. All Russian emigrants must pass singly between the depot physician and the guard for medical examination, after which they again assemble in a body.

9. If a cholera suspect is found by the physician, who has to be sent to a hospital, he must be kept isolated at the bureau of information under instructions from the officer. The police department at the depot must then immediately telephone (a) to the police station (VII) Westerstrasse for the cholera ambulance; (b) to the police station (V) Schützenwallstrasse for the sanitary assistant (hospital steward?).

10. If the police bureau at the depot is notified by the station master that a cholera suspect is on an incoming train, or on one just arrived, the medical examiner must at once be called, if he is not already present. The emigrants are not permitted to leave the cars until examined by the physician. The cholera suspects remain in the cars until they can be transported to the hospital.

11. All members of the family of a suspect, and all who have been in the same car with him, must be kept isolated at a hotel under the instructions of the officer of the bureau of information.

If in the opinion of the medical examiner more or all passengers should be isolated, it will also be done under the instruction of the officer of the bureau of information.

12. When a cholera ambulance is called for the police officer at the station Westerstrasse will at once send an officer to the fire department station Westerstrasse for a horse and driver.

The ambulance is kept in the stable of Mr. Holste, carpenter, Neustadtswall,

No. 37a. The key to the stable is kept at the police station, Westerstrasse. A police officer must accompany the ambulance to the depot.

13. The transport of the cholera suspect from the depot to the hospital in the ambulance is in charge of the sanitary assistant. The police officer must keep as far as possible from the suspects, and will render assistance only in the absence of the sanitary assistant. Hacks must not be used in the transport of cholera suspects. Dead bodies will only be transported in the hearse belonging to the board of health.

14. The sanitary assistant is instructed to send as soon as possible to the place of disinfection all the clothes, washing, and bedding of cholera suspects, and all such parties who have come into contact with them, also such articles known or supposed to be soiled with cholera dejections. He will also see that the isolation room, the cholera ambulance, as well as his own person, is thoroughly cleaned and disinfected.

#### *B. At the inn.*

15. Russian emigrants arriving in Bremen will be quartered at inns, designated by the officer of the bureau of information.

16. The innkeeper is not allowed, under a fine of 100 marks, to take in any but the Russian emigrants sent to him.

17. Under a penalty of a like amount the innkeeper must see that the emigrants undergo daily a thorough ablution, and that the rooms are kept clean. He must obey all instructions of the police surgeon and the sanitary assistant. He must also at once inform the supervising physician of any cases of indigestion, especially vomiting and dysentery (for those directly booked from home to place of landing, Drs. Hahn and Sonnenburg, and for the others, Drs. Dreier and Thorspecken).

18. The physician charged with the supervision of Russian emigrants must immediately report each suspicious case of sickness to the board of health.

19. When a case of sickness occurs in an inn, under symptoms which in the opinion of the physician requires transmission to a hospital, the innkeeper must see to the thorough isolation of the patient, and call on the police department for the ambulance and the sanitary assistant.

20. The police department must at once send for the sanitary assistant and telephone to station Westerstrasse for the cholera ambulance.

21. Upon arrival of the cholera ambulance, the transport of the patient, the disinfection of the clothes, bedding, etc., also the disinfection of the rooms, as prescribed in 13 and 14, must be attended to by the sanitary assistant.

22. The physician will decide which of the parties at the inn shall be isolated from the others.

The innkeeper must see that these instructions are strictly carried out, under penalty of a fine of 100 marks.

#### THE BOARD OF HEALTH.

BREMEN, *July 27, 1892.*

The North German Lloyd Steamship Company sent the following printed circular to every innkeeper in Bremen, by whom it must be conspicuously posted:

Passengers will be sent to such innkeepers who strictly carry out the following rules:

1. The following two solutions for disinfection must be kept on hand at each inn:

(a) Lime-milk: Two liters of broken, pure quick-lime (so-called fat-lime) is placed in  $1\frac{1}{2}$  liters of water; when the water has been absorbed and the lime is pulverized by that action, it is put in 8 liters of water and stirred to milk. This must be kept in a well-closed vessel and shaken before using.

(b) Carbolic acid soap-solution: 1 pound of brown soap is dissolved in 17 liters of hot water; then is added a wine bottle full of so-called carbolic acid of 100 per cent.

2. Carpets must be removed from all rooms occupied by steerage passengers.

3. Before using the rooms the floors must be thoroughly scrubbed with the carbolic acid-soap solution; tables, bedsteads, and chairs must be cleaned with soap; the bedding must be thoroughly aired and covered with clean linen; the rooms must be thoroughly aired; dark rooms must not be used.

4. One liter of lime-milk twice daily must be thrown into the closets, urinals, and drains. The seats of closets must be cleaned with carbolic acid-soap solution twice daily.

5. The rooms occupied must twice daily, in the forenoon and afternoon, be aired for some time, and the greatest cleanliness in the rooms must be observed.

6. Only boiled water must be furnished for drinking. Salads, fresh milk, fresh fruit, are strictly forbidden.

7. Special care must be taken that the emigrants clean themselves and their children with soap thoroughly. On the morning of the departure all have to undergo a thorough cleansing, and must put on clean linen.

8. A physician must at once be called in any case of indigestion (vomiting, diarrhea) and the North German Lloyd Company be informed.

9. The baggage of the passengers must have been disinfected the day previous, in accordance with existing instructions.

NORTH GERMAN LLOYD, PASSENGER DIVISION.

TO INNKEEPERS.

The following poster is put up at all hotels and other places where emigrants assemble:

By request of the American consul, the passengers must send all their baggage for disinfection to the freight depot of the North German Lloyd at the railroad station.

NORTH GERMAN LLOYD, PASSENGER DIVISION.

#### CERTIFICATE OF DISINFECTION OF BAGGAGE.

Names of passengers of steamship ———, sailing on the ——— day of ———, 189 —, from Bremen to ———, in the United States:

| Name. | Where from. |
|-------|-------------|
|       |             |

U. S. CONSULATE, Bremen, ——— 189 —.

I, ———, do solemnly declare under oath that the baggage of the above-named passengers has been properly disinfected in accordance with rules prescribed by the U. S. Treasury Department.

Sworn to before me and subscribed in my presence this ——— day of ———.

\_\_\_\_\_  
Consul.

U. S. CONSULATE, Bremen, ——— 189 —.

SIR: Inclosed you will please find reports upon the examination and sanitary condition of steerage passengers of the steamship ——— sailing on the ——— day of 189 —, from this port to New York.

I am, sir, very respectfully, yours,

\_\_\_\_\_  
Consul.

To the Hon. COMMISSIONER OF IMMIGRATION,  
New York.



BREMEN, ———, 189 .

Report upon the sanitary condition of the cabin and steerage passengers of the North German Lloyd steamship ———, whereof ——— is master, sailing on the ——— day of ———, 189 , from the port of Bremen for the port of New York, in the United States :

I, Dr. ———, medical inspector, appointed by the U. S. consul at Bremen and by the North German Lloyd Steamship Company, do hereby certify and declare under oath that on the ——— day of ———, 189 , I have personally and carefully examined the steerage passengers intending to sail with the above-named vessel, and find their sanitary condition and qualification for emigration to the United States as follows :

Number of persons examined, ———.

Number of persons accepted, ———.

Number of persons totally rejected, ———.

Number of persons temporarily rejected, ———.

*Causes of Rejection.*—Acute affections, contagious diseases, heart affections, phthisis pulmonalis, cripples, idiots, senility, leprosy, lupus, illegal pregnancy.

Other causes, ———.

And I further certify, that the sanitary condition of this city and vicinity is good, and that no contagious or infectious diseases exist, and I recommend that a clean bill of health be given said vessel.

—————,  
*Medical Inspector.*

UNITED STATES CONSULATE AT BREMEN.

Subscribed and sworn to before me, this ——— day of ———, 189 . Witness my hand and seal of office at Bremen.

—————,  
*Consul.*

The following regulations are issued and enforced by the Bremen board of health :

#### INSTRUCTION FOR DISINFECTION.

A. The following disinfectants are to be used :

1. Lime milk.—One liter of broken, pure quicklime is mixed with four liters of water in the following manner: About three-fourths liter of the water is poured into a vessel and the lime placed therein; when the water has been absorbed by it, and the lime becomes pulverized, the rest of the water is added and stirred.

When not immediately used it must be kept in a tightly closed vessel and be shaken before using.

2. Chloride of lime has only a sufficiently disinfective effect when freshly made and kept in tightly closed vessels; it is recognized by its strong and peculiar smell. It is used either as a powder or in a solution. The latter is prepared by mixing 2 parts of chloride of lime with 100 parts of cold water, and after settling the clear solution is poured off.

3. Solution of kalisoap with carbolic acid. The crude carbolic acid is not used, but the so-called "100 per cent carbolic acid."

Three hundred grams of kalisoap (smearsoap) and 500 grams carbolic acid are dissolved in 10 liters of hot water. The best way is to stir the soap, first in some hot water, and then add, while stirring, first the carbolic acid and later the remainder of the water. This solution will keep a long time.

The pure carbolic acid is more expensive, but not more effective than the "100 per cent carbolic acid." The first dissolves readily in pure water, and the latter only in soap water. A 5 per cent solution is used.

B. The use of disinfectants :

1. The liquid dejections of cholera patients (vomit, excrements) are, if pos-

sible, caught in vessels and mixed with lime milk (I No. 1) in about even parts. This mixture must be kept at least one hour before it may be poured into the closet as harmless.

Chloride of lime (I No. 2) may also be used for the disinfections of the liquid dejections; at least 2 heaped tablespoonfuls of it in powdered form must be added to one-half litre of dejections, and must be well mixed. The so-prepared fluid may be removed in fifteen minutes.

2. Hands and all parts of the body which have come in contact with the liquid dejections (vomit, excrements of the patient, soiled linen, etc.) must be disinfected by cleaning them thoroughly with the chloride of lime solution (I No. 2) or with the carbolic acid soap solution (I No. 3).

3. Linen, bed linen, and wearing apparel must, after being soiled, at once be well moistened with carbolic acid soap solution (I No. 3) and kept in closed vessels or bags until called for by the medical assistant and taken to the steam apparatus for a thorough disinfection. Whoever has touched such articles must disinfect his hands in the manner as prescribed in (II No. 2).

4. Wearing apparel which can not stand this moistening process must be hung up to dry in the sick room, but before being taken away it must be wrapped in a cloth moistened with carbolic acid soap solution.

5. The floor and furniture of the sick room must be carefully and repeatedly rubbed off with a rag moistened with carbolic acid soap solution (I No. 3). The so-used rags must be burned.

The floor may also be disinfected by smearing upon it lime milk (I No. 1), which must afterwards be scrubbed off, but not until at least two hours have elapsed.

6. The walls of the sick room must be whitewashed with lime milk, if such can possibly be done.

The sick rooms must be left unoccupied for twenty-four hours, if such be possible, after having been disinfected, and must be frequently aired.

7. Clay or dirt floors, pavements, and gutters befouled by dejections of cholera patients must be disinfected by cleaning them with lime milk (I No. 1).

8. One liter of lime milk must be poured into the closet daily; the seat must be washed with the carbolic acid soap solution (I No. 3).

9. Articles of little value, especially the straw for bedding, must be burned.

THE BOARD OF HEALTH.

BREMEN, *August 9, 1892.*

#### CHOLERA IN BREMEN.

The total number of cases of cholera in this city during the past season was six. Four of the cases occurred among "lightermen" who came here directly from Hamburg; the two others were citizens of Bremen who were brought in contact with the first cases. Not a single emigrant had the disease; the last death was on September 6.

Consul Starkloff issued instructions to the proprietors of the boarding houses requiring them to report immediately at his office every case of diarrhea or vomiting, no matter from what cause it was said to arise, and a physician was immediately dispatched to the house to find out the cause of the disorder. The lodging house keepers were so much alarmed lest a case of cholera should develop in their houses that this regulation was rigorously carried out.

All the regulations made by the consul and the steamship company were printed in seven languages and posted conspicuously in every house, and the proprietors were directed to see that they were carried out without variation on penalty of having their name stricken from the roll of the company's list of boarding house keepers. It is said that diarrheal diseases were quite prevalent in Bremen and its vicinity during the summer and that a number of the emigrants were affected

when in the city, but so thoroughly were the orders of the consul obeyed that the affections speedily disappeared, and it is believed that the immunity from disease of all kinds among emigrants was due to the precautions taken by the consul and the efficient and thorough aid given him by the steamship company, who promptly put his suggestions into practice.

Baggage is disinfected by sulphur fumigation, generally without opening the packages, and is done on the steamship company's wharves at Bremerhaven. The method of disinfection of baggage in bulk, which we have found practiced at all the ports thus far visited, seems to be considered sufficient to prevent infection from entering the United States. At each place we told the officials that we did not consider this proper disinfection, for the reason that the fumigation of the outside of a closed wooden box could not possibly affect any disease germs which might be within, and that this process gave a false sense of security, for the thoughtless person, assuming that the baggage had been disinfected, would take no further precaution, even if he had been previously in contact with some person having a contagious disease, and thus unintentionally spread the contagion.

At Bremen there are three rag exporters, but at the present time we were told that only one of them is shipping rags.

We visited this place and were informed by the proprietor, Mr. Achendorf, that all his rags were disinfected at the workhouse, the place of detention for petty offenders; to which institution we went. Requesting to be shown into the disinfecting chamber, we were taken to a room where bedding, clothing, etc., of persons in the hospital infected with contagious diseases are disinfected. It is a chamber made of boiler iron, about 10 feet long, 4 feet wide, and 7 feet high. The door, which is the full size of the front of the chamber, is made to close hermetically; the material to be disinfected is placed upon racks mounted on wheels, and pushed into the oven; the door is then closed and steam turned on, any pressure desired being obtained. The apparatus, which is quite simple but apparently effective, is the patent of Oscar Schimmel & Co., of Chemnitz, Germany. Expressing some surprise that the rags sent by Mr. Achendorf should be disinfected in so small a space, the superintendent of the establishment said: "Oh, they are not disinfected here," and took us into a small inclosure outside of the building, where we saw a large pile of rags on the ground. The disinfection, which was in process, was accomplished by squirting a weak solution of carbolic acid over the pile by means of a common garden syringe; they were then rebaled and branded "disinfected." Comment is unnecessary. The last shipment of rags made by Mr. Achendorf, certified as "disinfected," was on November 21, 1892, consisting of 280 bales.

We next called at the office of the North German Lloyd Steamship Company, and arranged a conference with them to be held the next day, Sunday, January 29. Accompanied by Consul Starkloff, we went to the office of the North German Lloyd Steamship Company, where we had an interview with Directors Marquardt and Bremmerman. We informed them of the object of our visit and they promptly offered to render us any assistance in their power. During the conversation they stated that they were in entire accord with Consul Starkloff concerning the necessity for a thorough physical examination of the emigrants and of the methods now in use at their boarding houses. It is their opinion that it is better to segregate the emigrants rather than put them into one large building, because in the event of contagious disease occurring only those in the boarding house where it appears will be contaminated. They have no boarding house in which there are more than twenty persons. They said that all ships are thoroughly disinfected before sailing by sulphur fumigation, the water-closets washed with a solution of creoline, the whole process of fumigation and disinfection being under the direction of a competent chemist who is made responsible to the U. S. consul



and who verifies the completeness of his work by affidavit. The company purchased a house near their docks in which all disinfecting is done. During the continuance of the active epidemic of cholera the baggage of all passengers coming from suspected countries was opened and the contents taken out and submitted to sulphur fumes. When the disease subsided they did not open the packages, but disinfected the goods in bulk; and this is still done.

We were shown the plan of the building which they propose to erect to be used exclusively for disinfecting baggage. It is to be made of iron and practically airtight. We suggested that if cholera should reappear the U. S. Government might require the disinfection of all baggage, and that it might be necessary to open the boxes and spread the contents. They thereupon decided to modify the plan and arrange one part of the building so as to disinfect by steam heat, and reserve the other part for such articles as might be injured by steam, but which could be disinfected by sulphur. They agreed before deciding upon a permanent plan to consult an engineer with a view to carrying out the suggestions made. They said it would be their constant effort to carry out every requirement which the U. S. Government might suggest relative to improving the sanitary condition of their ships or increasing the comfort of the emigrant. At first they thought some of the requests made by Consul Starkloff were rather severe, but they now saw that the suggestions had been for their interests, even in a business point of view, and that they would be glad to continue the routine examination now carried on because they saved money by it in the end. They requested us to make any suggestions that we might think of which would in any way improve the methods in use, and they would gladly put them in practice. We then suggested to them the methods of disinfection which had been proposed by the steamship people of Antwerp relative to the disinfection of all baggage on the United States side of the Atlantic. While they thought the proposition excellent and one in which they might themselves wish to join, they preferred, as a matter of safety to themselves, to carry on such disinfection at their own wharf as the U. S. Government might direct. Disinfection of baggage before it was put on shipboard might prevent an epidemic of disease from occurring while the ship was on the ocean, and if it did so it would certainly obviate expensive quarantine proceedings in a foreign port.

January 30 called upon Consul Starkloff, who had just received information that Consular Agent Ihlder at Bremerhaven had authenticated some invoices sent to him by Wertheim & Co., of Cassel, consigning a quantity of rags to parties in New York. On Saturday last, January 28, Consul Starkloff received a letter, of which the following is a copy :

“CASSEL, *January 25, 1893.*

“SIR: Having some grounds to believe that the firm of Wertheim & Co., of this place, who are shipping rags to the United States, are not acting altogether square in the matter of having their invoices authenticated at the proper consulates where it should be done, I would respectfully suggest that you would be good enough, in case any invoices of said firm are offered at your consulate, to ascertain whence these goods originate. My reason for mistrusting that everything is not as it should be is this: Wertheim & Co. on the 7th instant sent a certificate of health issued by the Bezirks Vorsteter of this city (such as are usually sent with shipments of rags to America) to this agency for legalization, and stated at the time that the invoices for the goods would be presented for authentication within a week or so, but up to this day this has not been done, and I deem it very likely that the goods in question will be shipped from some other consulate.

“I am, sir, your obedient servant,

“J. C. KOTHE, *Consular Agent.*”

“Hon. HUGO M. STARKLOFF,

“*United States Consul, Bremen.*

To this letter Consul Starkloff replied that no application had been made to him for authentication of an invoice for shipment of these goods. On reaching his office this morning he found that Consular Agent Ihlder at Bremerhaven had authenticated the goods, which were as follows:

Invoice No. 14, dated January 25, 1893, consigning 439 bales of rags "to whom it may concern," at the port of New York on the steamship *Lady Blessington*.

Invoice No. 15, same date, consigning 178 bales of rags sent by Wertheim & Co. "to whom it may concern," at the port of New York, on the steamship *Senator Iken*.

Invoice No. 16, dated January 25, 1893, consigning 100 bales of old bagging to Henry N. Wolff, New York, sent by Julius Scharbau & Co., of Bremerhaven, by steamship *Senator Iken*.

Invoice No. 17, consigning 268 bales of old bagging and 112 bales of rags to Henry N. Wolff, New York, by Julius Scharbau & Co., on steamship *Senator Iken*.

Immediately upon the receipt of these invoices Consul Starkloff telegraphed to Consular Agent Ihlder, at Bremerhaven, to stop shipment of rags if possible. He received a reply that the ships had already sailed, the rags having reached Bremerhaven just in time to get them on board. Consul Starkloff said that this was the first instance of such an occurrence within his district, and he believed that some false representations must have been made to Mr. Ihlder, and insisted that we should go with him to Bremerhaven and make a thorough investigation of the subject. In view of the facts we decided to go to Bremerhaven, and arranged to leave the next day.

We then went to the rag establishment of A. H. Rissenburg, of Bremen, who, in response to our inquiries, said that he dealt only in old bagging, jute, and paper stock, which he sold to a firm in Hanover; that the articles were not disinfected by him. We then visited the establishment of Mr. Hagemeyer, who said that the rags he handled were all gathered near Bremen, and were disinfected at the workhouse by the methods already described. We went next to the warehouse of Mr. Achendorf, previously spoken of; he told us that he had arrangements by means of which he could disinfect about 20 bales per month, but that he sent out more than this; he said that the disinfection was done on the premises, in a room set apart for the purpose, under the supervision of one Dr. Pineti. Upon requesting permission to see the disinfecting chamber, he firmly refused to admit us, saying that it was locked up, and all his employes had gone away; we asked where the rags came from which he handled; he replied from Bremen and vicinity. We then asked him if he knew positively that none of the rags came from Hamburg, and his reply was, "I know nothing about it. I buy them from small dealers, and don't know where they come from; they may have come from Hamburg."

He said that he sorted the rags himself, and now employed about 80 sorters. When asked how many tons he could disinfect at one time, he said, "Oh, not tons; not more than 3 bales, and I leave them in the disinfecting room for two days." He was asked how Dr. Pineti assured himself of the proper disinfection of the rags; he replied, "We tell him that it has been done; the doctor does not stay on the premises." He would not say to which place he shipped the rags, but said he sold them wherever he could find a market, and was very anxious to open negotiations for the extension of his business in America. We were not taken into his warehouses, nor would he show us any of his methods. He said the disinfecting was done according to the U. S. Treasury Department circular. Before leaving we asked again to be shown his disinfecting chamber; he politely declined, saying that it was locked up. We have previously stated that we saw Mr. Achendorf's rags at the workhouse being "disinfected" by squirting some carbolic solution on them with a common garden syringe. This may account for his refusal to show

us the disinfecting room "on the premises." In the evening we visited the consul's office, where we saw all the forms filled out in accordance with recent regulations, and which related to the sailing of emigrants who were to go to the United States on the steamship *Elbe* the next day, including the book kept by the examining physicians, in which is written out in full the physical condition of each passenger.

January 31, we took the early morning train for Bremerhaven, accompanied by Consul Starkloff and Dr. Wiegand, director of the North German Lloyd Steamship Company. Arriving at the wharf, we went on board the *Elbe* at Nordenheim, where we witnessed a rigid examination of every part of the ship by one of the directors of the company, who was accompanied by the ship's captain; the examination involved all that pertains to the sanitary condition of the ship and the comfort of the passengers. After leaving the vessel we went to the office of Consular Agent Ihlder. In answer to our inquiries concerning the invoices above mentioned, covering goods sent by Leopold Wertheim & Co., of Cassel, Mr. Ihlder said that the rags came to Bremerhaven a short time before January 19, but he could not give the exact date; the rags were in bales ready to go on shipboard. One Julius Scharbau, of Bremerhaven, came to see about their shipment. Mr. Ihlder told him that they could not be shipped without a certificate of disinfection; this was not forthcoming, but Mr. Wertheim sent Mr. Scharbau a power of attorney. Mr. Scharbau said that he had rented an old house and took the rags away; when he returned them he told Mr. Ihlder that they had been disinfected by sulphur fumes. We asked to see the house, but were told by Mr. Ihlder that the "whole place had been dismantled, and that there was really nothing to see." We could not obtain any definite information about the disinfection, by whom it had been done, nor who had given the certificate. Mr. Ihlder said that the certificate was made out by the man employed to do the work. We made every effort to see this man, but "he could not be found." After the rags were brought from the house they were put on board ship and sent to New York.

We asked Consular Agent Ihlder if he did not think this action of Wertheim & Co. somewhat peculiar; while he would not admit irregularity in the method, he said it did look strangely.

We asked Mr. Ihlder how many bales of rags had been recently shipped from Bremerhaven. His books showed that since November 2, 1892, until January 1, 1893, there were shipped from Bremerhaven to the United States 12,652 bales. He stated that most of them came from Hanover, but a few came from Trier, Riesa, Berlin, Magdeburg, and Cologne.

We were told that large quantities of rags were then being put on shipboard, and we were asked to go and see the method of "external disinfection" in use at this port. We went to the wharves and found the steamship *Ithamo* being loaded with rags bound for New York. Upon asking where the "external disinfection" was being done, we were taken to the side of the ship where the bales were being hauled up in the usual manner. There we found a man having in his hand a small garden sprinkling pot with which he sprinkled a few drops of a very weak solution (so weak that the odor was hardly perceptible) of carbolic acid on one side of the bale as it went up the ship's side. Not more than a teaspoonful could have been sprinkled on each bale, and this was the process of "external disinfection" in use at this place.

We went into one very large warehouse, filled with bales of rags awaiting shipment. We ripped open the seams and pulled out samples of the rags inside, for the purpose of detecting, if possible, the odor of sulphur, as all these rags were supposed to have been disinfected by fumigation in sulphurous acid gas. Although each member of the party (there were four of us) endeavored to detect the unmistakable odor of the gas, we were unable to do so. The only odor perceptible was



the bad odor of the dirty rags, with which we were now quite familiar. Most of the rags in the storehouse at this time came from Hanover, and were branded with a stencil "Germany, disinfected." We saw the certificates in Vice-Consul Ihlder's office certifying that the rags had been disinfected, but it did not give the method, where it had been done, nor when; nor was there anything to show where the rags came from. The certificates set forth that "the rags were gathered in a country not infected by cholera;" yet the invoices show that they were shipped here from Hanover, Hamburg, Magdeburg, and Cassel, the latter not far from Nietleben, where a severe epidemic of cholera is raging. Sporadic cases are occurring in the other places mentioned, and it has not yet ceased in Hamburg, from which place rags are coming in large quantities, as there are now no restrictions upon the movement of rags anywhere in Germany.

We then visited the disinfecting chamber of the North German Lloyd Steamship Company. The building is of brick, is practically tight, and well arranged for the purpose, but is not large enough; hence the determination to build a much more extensive plant. Returning to Bremen, it was decided that as the territory over which we desired to travel was more extensive than we had imagined we would separate, and it was arranged that Dr. Irwin should visit Hamburg and vicinity, and Dr. Kempster should go to Hanover and Magdeburg, to meet at Berlin. In accordance with this arrangement Dr. Kempster left Bremen on the morning of February 1, going to Hanover, to which place Consul Starkloff accompanied him. Arriving there we went at once to the office of Consular Agent W. B. Murphy, to whom we stated the reasons for our visit. From his invoice book we obtained the number of bales of rags which had been sent from Hanover to Bremerhaven for shipment to the United States since November 1, 1892, until January 30, 1893. The number was obtained from the original invoices on file in the office, and the total number of bales shipped in three months was found to be 14,568. By referring to the figures which we obtained from Consular Agent Ihlder at Bremerhaven, it will be seen that the number of bales of rags shipped from Hanover alone to Bremerhaven exceeds the total number said to have been sent by Agent Ihlder from Bremerhaven to the United States by 1,916, without taking into account the bales which have been shipped to Bremerhaven from other places by other rag exporters. Mr. Murphy said that he had never visited the establishments of the rag exporters here, and knew nothing personally about the disinfection. He said the rag exporters employed their own inspectors, and that he merely certified to the genuineness of the signatures appended to the certificates. The records of the office show that one of the inspectors is Dr. Max Mündheim, who was appointed and paid by the firms of Jacob Solomon and J. Katzenstein & Son. Mr. Murphy said that he had nothing whatever to do with the appointment and knew nothing about the processes of disinfection.

There are no municipal regulations requiring the disinfection of rags, nor is Dr. Mündheim a sanitary officer. Mr. Murphy did not know how often the disinfecting chambers were visited by the doctor, and he knew nothing further about the subject than that the two large exporters in this city bring affidavits for the consular certificate attesting to the genuineness of the signature of Dr. Mündheim.

Mr. Murphy stated that all the rags sent from Hanover go to Bremerhaven or Geestemünde. He said that the agency had never received any instructions from the Treasury Department concerning the certification of the disinfection of rags, and all that was done had been arranged for by his brother, who is the regular agent at this place, but now absent on leave in America.

The form of certificate used in this agency which accompanies the invoice of rags contains the following clause: "That no cholera or other contagious disease or diseases prevail at present in or near the city of Hanover or have come to my official notice."

The returns from the sanitary authorities of Hanover, which are forwarded from this agency every week to the Surgeon-General of the Marine-Hospital Service, show that for the week ending January 18, 1893, there were then in Hanover typhus fever, diphtheria, scarlet fever, and measles; and that deaths from each disease had occurred during that week. It was suggested to Mr. Murphy that hereafter it would be at least prudent to note on the margin of the certificates sent by him to the United States that such diseases are prevalent in the city, if such should be the fact.

We were informed that Mr. Jacob Solomon, an exporter of rags, did not like to sign the blanks issued by the consul, so he prepared his own and filled them out, Mr. Murphy merely certifying that the signatures were genuine. Mr. Solomon, one of the largest exporters here, and who has other rag warehouses in Germany, forwards his rags to Felix Solomon, of Nassau street, New York; Mr. Katzenstein, the other exporter, sends to whomsoever purchases.

Accompanied by Consul Starkloff and Mr. Murphy, we went to the warehouse of Jacob Solomon to see his disinfecting room. We were taken to a large brick building, two stories high, about 100 feet long, 40 feet wide, and 24 feet in height. Mr. Solomon asked if we would like to see the inside; on being answered in the affirmative he took hold of a wooden shutter and opened it; the window sash beneath was open, being raised to its full height. Looking into the room we found there were two tiers of crude wooden racks, on which rags were spread to the depth of 4 or 5 inches. Although it was said they were then disinfecting, there were not fumes enough to seriously affect breathing, nor was it possible that there could be, for a number of windows were open full width, besides numerous broken panes of glass in the sashes. It was not possible to disinfect anything in the room as we saw it. We requested permission to go upstairs. Mr. Solomon replied that there was too much sulphur in the upper room. Repeating the request, he at last unlocked the door and we walked up. The room was the same size as that below, and there were two tiers of racks in it on which the rags were placed. On one side of the room were eight large windows; in each window one or more panes of glass were broken out. Sulphur fumes were not sufficient to prevent us from remaining in the room long enough to complete our examination and to determine that the process in use was of no value. This is one of the establishments which employs Dr. Mündheim, who certifies that the rags have been "duly disinfected in accordance with Treasury Circular No. 143." It is also one of the largest exporting houses in Germany. In response to our inquiries Mr. Solomon stated that no case of contagious disease had occurred among his employees which could be traced to the handling of rags, and that he had never known a case of sore finger (anthrax).

We next visited the establishment of Katzenstein & Sons, and requested to be shown the disinfecting room. We were at once taken to a room containing 120 square metres floor space and about 14 feet high. There were no doors, the large entryway into the room being covered by coarse blankets hung up like portieres. On one side of the floor the rags were piled up in a continuous row 4 feet deep, a platform raising them about 6 inches from the floor. The rags, however, were piled against the wall of the room, so that there could be no circulation underneath the platform if it had been intended. The entire floor was covered with rags from 3 to 4 feet deep, except some small circular spaces in which the sulphur pots stood. The fumes did not prevent a complete examination of the room, the openness of the structure making it a matter of impossibility to retain them; the disinfection of course being worthless. We told the proprietor that the rags were piled up too high on the floor, that the fumes could not possibly reach into them. The response was that they put in a few rags at a time, scattering them at intervals of about two hours, and that the room was refilled four times in twenty-four hours, the work of refilling being carried on while the sulphur was burning.

It is due to Mr. Katzenstein to say that, in our judgment, the inefficiency of the process was because of lack of knowledge how to do it; the firm relying entirely, so they said, upon Dr. Mündheim's assurance that the rags were fumigated in accordance with the requirements of Circular No. 143. Both firms said that all the rags handled by them were gathered in the province of Hanover; when asked for particulars on this point, they both replied that they bought of small dealers, and did not know exactly where the rags came from. Mr. Solomon had previously informed us that at this time he received a good many rags from Hamburg which he "disinfected," and then sent to the United States by way of Bremen. The rags we saw here had been collected, they said, during the summer and autumn, and came from all parts of Germany where there had been and still are cases of cholera, and where there are at this time cases of typhus fever, scarlet fever, and diphtheria. The method of disinfection is of no value whatever, and does not in any respect conform to the requirements of Circular No. 143, yet every bale is branded "Germany, disinfected," and is admitted to the United States under a certificate of disinfection signed by a man who visits the establishments but seldom, and who certifies that it is done in accordance with Department circulars.

The following are the forms of certificates in use at this agency:

U. S. CONSULAR AGENCY,  
Hanover, ———, 189 .

I, ———, of the firm of ———, Hanover, do solemnly swear and truly declare that each and every bale in the invoice No. ———, dated ———, 189 , of ——— bales of rags shipped by steamer ———, from ——— to ———, are domestic German rags and not reshipments; and further, that the rags thus shipped have neither been collected, packed, or otherwise placed or passed through any district or districts infected with cholera or any other infectious disease.

—————,  
Of the firm of ———.

U. S. CONSULAR AGENCY,  
Hanover, ———, 189 .

I, ———, consular agent of the United States of America at Hanover, do hereby certify that the signature of ——— at the foot of the above paper is his true and genuine signature, made and acknowledged in my presence, and that the said ——— is personally known to me.

In witness whereof I have hereunto set my hand and affixed the seal of the consular agency at Hanover, this day and year next above written.

—————,  
Consular Agent of the United States.

U. S. CONSULAR AGENCY,  
Hanover, ———, 189 .

I, ———, consular agent of the United States of America at Hanover, do hereby certify that from official information received from the sanitary authorities of ———, I am convinced that no cholera exists in or near the city of Hanover, and that to the best of my knowledge and belief no cholera or other contagious or infectious disease or diseases prevail at present in or near the city of Hanover or have come to my official notice.

—————,  
Consular Agent of the United States.

The following is Dr. Mündheim's certificate:

I, Max Mündheim, medical doctor, do hereby certify that the rags mentioned in the invoice hereto annexed, consisting of ——— bales, have been duly disinfected under



my direction and inspection in the manner prescribed by clause 3 of circular note order No. 143, issued by the Hon. O. L. Spaulding, Secretary of the Treasury, on August 19, A. D. 1892, and that I am fully satisfied that the rags so disinfected by me are free from cholera or contagious or infectious disease.

HANOVER, GERMANY, ———, 189 .

U. S. CONSULAR AGENCY,  
*City of Hanover, German Empire.*

I, the undersigned, consular agent of the United States of America at Hanover, Germany, do hereby certify that the signature of Dr. Max Mündheim, medical doctor, above written, is his true and genuine signature. I further certify that the invoice No. ———, which covers the wares referred to in the above medical certificate, shows that these rags were shipped to the United States from the port of Bremen.

Witness my hand and the official seal of this consular agency this ——— day of ———, A. D. 1893.

—————,  
*U. S. Consular Agent.*

As above stated, Mr. Solomon will not use the first blank issued by the consular agent, and has one of his own, of which the following is a copy:

We do hereby solemnly and sincerely declare on oath that the ———, together ——— bales of disinfected rags under consular invoice No. ——— shipped by us from ——— per steamer ——— to New York, have been bought and placed in our rooms since before the cholera appeared in Hamburg, and that they were collected in our city and the districts free from cholera or other contagious disease and packed in the time there was no cholera here.

HANOVER, GERMANY, *January ———, 1893.*

Declared to before me this ——— day of ———, 1893.

—————,  
*U. S. Consular Agent.*

We were informed by Mr. Murphy that not long since there was an outbreak of smallpox among the employes of Mr. Solomon's establishment, which was traced by the sanitary authorities of Hanover directly to a quantity of rags which had been brought there from some other town.

February 2 left Hanover for Cassel, reaching the latter place at 11 p. m. On the morning of the 3d called upon Consular Agent G. C. Kothe, who informed us that there were two rag warehouses in this city—Wertheim & Co. and Nathan Abt. The latter has no disinfecting chamber, and he did not know where he sent the rags.

The last shipment made by Wertheim & Co. was on this date, February 3, and consisted of 642 bales consigned "To whom it may concern" in New York. They go from Bremen on the steamship *Akabe*.

Dr. Karl Suth superintends the disinfection. We were told that he is not a Government official, is not a sanitary officer, nor is he in any way connected with or recognized by the municipal authorities as an inspector. He is appointed and paid by Mr. Wertheim; he comes to the consulate whenever an invoice is made and swears that the rags have been disinfected according to Treasury circular, method No. 3. Mr. Kothe said that he had never visited the warehouses and does not know anything about the disinfection; that he translated Department circular No. 143 into German and gave it to Mr. Wertheim, but he knows nothing further about the matter. Accompanied by Mr. Kothe we visited Mr. Wertheim's place; he was then absent and the person in charge objected to showing us the disinfecting room. We persuaded him to telephone to Mr. Wertheim, who at once granted the

necessary permission, and we were conducted into the third story of a large warehouse. What they called the disinfecting room was about 150 feet long, 40 feet wide, and from 16 to 18 feet high. On one side of the room there were bins about 6 feet wide by 14 feet deep; the partitions between the bins were openwork with a 2-inch mesh. On the bottom of the bin, 14 inches above the floor, was a platform, on which the rags were spread 3 feet deep; under the platform there was a small iron pan, in which it was said the sulphur was burned; in the wall opposite the bins the windows are placed, 6 feet apart, the entire length of the building; many panes of glass were broken. We were informed that the employes continued to work in this room while the rags were being "disinfected." It may be readily understood there was no disinfection at all. The invoice of rags mentioned above, forwarded to-day, had been "disinfected" in this room, the bales branded in the usual manner, and there were a large number of bales then on hand awaiting shipment, marked "Germany, disinfected." Our informant stated that the rags were gathered "all about here;" he acknowledged, however, that they were purchased from small dealers, and that it was therefore impossible to tell where they came from. He said that the stock on hand was gathered during the autumn, while cholera prevailed in Germany, and that they are now "disinfecting" the rags and sending them to New York via Bremen. The certificate of Dr. Karl Suth sets forth that the rags have been duly disinfected according to method No. 3 of Department circular No. 143.

In the evening Mr. Wertheim called at the hotel, and said during his conversation that he was willing to build any kind of room that was thought best by the United States officials in which to disinfect the rags. When we explained to him what the Department circular required, he promised to begin work in the morning and make the present room as tight as possible. It should be said that there is no attempt made to confine the fumes of sulphur to the bins, and that they permeate every part of this large establishment. Dr. Suth, he said, left the entire matter of disinfection in their own hands, simply making the required certificate when the invoice was brought to him.

Wertheim & Co. are the parties who sent the rags to Bremerhaven for shipment to the United States without disinfection, which we described in the account of our visit to Bremerhaven.

February 5, returned to Berlin and joined Dr. Irwin.

February 6, called at the United States legation and requested the chargé d'affaires to procure for us such official documents issued by the German Government which in any way referred to the epidemic of cholera or to the importation or exportation of rags.

We then called upon Consul-General Edwards, who informed us that rags from Berlin are generally sent to Stettin for shipment to the United States, and that large quantities are being shipped from there at this time. Consul-General Edwards has made a thorough examination into all matters pertaining to the disinfection and forwarding of rags to the United States. In speaking of the shipment of rags and of the certificates which are forwarded with each invoice, he said that an oath administered by a consul or consular officer in Germany was not binding, and that a person making a false oath before a consul could not be punished, and that most of the shippers knew it. In explanation of this statement, he said that the German Government has decided that an oath is not legally binding which is not administered in a prescribed place and before a German official; therefore, any person who desires to take advantage of this circumstance can do so with impunity.

February 7, took the 6:30 morning train to Magdeburg, and on arrival went to the office of Consular Agent Albert H. Washburn, who informed us that no invoices of rags had been authenticated at that office for a long time, the last direct

shipment having been made in the autumn of 1891. Accompanied by Mr. Washburn we went to the rag establishment of Mr. Edward Klaue. The proprietor informed us that he was now and for some time past had been sending about 100 tons of rags per month to Mr. Jacob Solomon, of Hanover, who now shipped all the rags for him; that he found this a better way than to send them himself, to the United States; that most of the rags he shipped went via Stettin. He said he did not disinfect his rags, and had no arrangements to do so. He sorts them here and prepares them for shipment, dividing them according to the methods usual in the trade. When asked where the rags came from he replied, "Around here." I asked him if he could not double his present output, providing he had a regular order for shipment to the United States. He replied, "Oh, yes; my rags come from Thuringia; I could write to my agents there to send me 200 tons a month or even more; I could arrange to begin shipping them as early as the 1st of March;" that he would like to do so if he could make arrangements with American firms, but that under his present contract he sent his entire output to Mr. Solomon.

The Mr. Solomon mentioned is the same person whose establishment we visited at Hanover, and who assured us that all his rags were gathered from the immediate vicinity of Hanover.

The statements of Mr. Klaue show that rags are forwarded from Thuringia to the United States and that they go by way of Stettin.

The territory from which the rags come which pass through the hands of Mr. Jacob Solomon covers a large part of the German Empire instead of being gathered in the country immediately about the city of Hanover. Mr. Klaue said that the rag business was very profitable now, and that he would like to make contracts at present prices and send his goods direct to America, as he could then draw against the shipment invoices. He said that nearly all his goods went to New York and did not differ in any way from the usual trade goods. Like the other dealers visited, he received rags in loose bales, sorts and prepares them in the usual manner, and packs them in bales ready for exportation.

Official statistics of the German Empire show that outside of the city of Hamburg there were in the several localities mentioned below during the autumn of 1892 cholera cases as follows, and it is from these places that many of the rags were gathered:

|                     | Cases. |                                | Cases. |
|---------------------|--------|--------------------------------|--------|
| Altoona.....        | 882    | Saxony.....                    | 24     |
| Hanover.....        | 383    | West Prussia.....              | 15     |
| Pomerania.....      | 98     | City of Berlin.....            | 30     |
| Brandenburg.....    | 78     | The two Mecklenburgs.....      | 95     |
| Rhine Province..... | 29     | Hamburg up to November 17..... | 19,647 |

#### CHOLERA IN MAGDEBURG.

The first case of cholera in this city was reported on the 29th of August, 1892 and on the 30th two other cases, all three coming from Hamburg on boats. Only one case occurred among residents of the city, and it is not known whether he had been in contact with the boatmen. There was another death in October, and this person came from Hamburg. The municipal authorities took prompt action, keeping the city scrupulously clean and establishing excellent sanitary rules, which were posted at a number of public places in the city as well as on bill boards. There were, in all, 12 cases and 6 deaths. One great danger remains. The city is supplied with water taken from the Elbe, and nothing has yet been done to secure a supply from other sources, or to purify the water from this source.

Returning to Berlin on the morning of February 28 I was joined by Dr. Irwin, and we called at Consul-General Edwards's office, who gave us further information concerning the rag establishments in Berlin. As in the other places heretofore visited, each of the exporters appoints an inspector, who is paid by the firm employing him, and over whom the consul has no supervision, and of whose methods he knows nothing.



Appreciating the danger there was from the importation of disinfected rags into the United States, Consul-General Edwards sent a dispatch upon the subject to the State Department, which was dated August 26, 1892, in which he said: \* \* \* "I desire to add a word of warning in respect to the danger that must come to us through the importation of rags.

"Large quantities of rags are awaiting shipment at Hamburg.

"It is but an hour and a half by rail from Hamburg to Bremen, and not many hours by water from Cuxhaven to Bremerhaven. There is danger of the Hamburg rags reaching our shores by other than the Hamburg steamers.

"It is absolutely impossible for a consular officer to ascertain definitely the names of the places where rags are gathered, consequently it is quite out of the question for him to determine whether any part of a shipment comes from an infected district.

"There is actual danger wrapped up in every bale of rags which comes to our shores, and the only efficient way to disinfect them is to burn them.

"The strictest possible watch on the part of consular officers must prove ineffective in keeping shippers from shipping rags from an infected district in Germany to a district that has not been officially declared to be infected.

"There should, in my opinion, be no distinction made between the restrictions placed upon the importation of rags from infected and from noninfected districts.

"I should keep them all out of the country, but so long as our authorities see fit to admit them, I beg most respectfully and most earnestly to urge that shippers of rags will not willingly submit to regulations which they regard as restrictions upon their trade. They are pretty certain to evade our regulations as often as the chance comes by shipping their rags from a noninfected district without regard to where they gather them.

"An effective watch can not be maintained over any rag gatherer's movements.

"I have the honor to be, sir, your obedient servant,

W. H. EDWARDS, *Consul-General.*

"HON. WILLIAM F. WHARTON,

*Assistant Secretary of State, Washington, D. C."*

From Mr. Edwards we learned that when exporters in Berlin send rags to the United States on an invoice "to whom it may concern," the cost of disinfection is charged at the rate of 2 marks per bale, but that when they are consigned to a person named in the invoice the cost of disinfection charged by the same shipper is 1 mark per bale. It is impossible for consular officers, said he, to keep track of the shipment of rags owing to the decision of the Treasury Department, which, by circular dated July 29, 1891, permits rags to go out of one consular district to another because there is no duty on them, and dealers are not required to produce before the consul the original bills of purchase required from those who ship goods subject to duty when they apply for an invoice. Therefore any rag exporter in southern Germany may send his rags to an exporter in northern Germany or elsewhere and there obtain an invoice without difficulty; and this, he said, had been done through the entire autumn, and is being done at this time by exporters in Berlin. Consul-General Edwards said that the only certificate he makes is to the genuineness of the signatures of the parties before him, and that he makes no certificate concerning disinfection.

From Berlin there had been sent to the United States, as shown by the invoices since December 27, 1892, until February 7, 1893, as follows: Via Stettin, 2,429 bales of rags; via Bremerhaven, 1,109 bales of rags.

These two ports are the only ones through which rags may be shipped to the United States at present.

February 9 we visited the establishment of Levy & Streich, one of the largest exporting houses in Germany.

The warehouse is a five-story brick building, and every part of it was full of rags which had been "gathered in Germany." The proprietor said they tried to get rags from districts which had not been infected by diseases; but that, as a matter of fact, he had no knowledge of where the rags were gathered. They employ about 100 sorters, and deal in all sorts of rags, linens, white, colored, new cuttings, flax waste, etc.

He told us that rags going to the United States were disinfected on the premises; they employ their own inspector, who certifies that the rags have been properly disinfected. The inspector visits the establishment "when he thinks it necessary." Being asked if they marked the bales which were disinfected, they said "Yes," and produced a stencil which is kept in the office, the bales being branded by one of their own men who is under no supervision of any kind.

At our request we were shown the disinfecting room, in which the sulphur was then burning. It is 60 by 45 feet and 10 feet high. There is one rack about 4 feet from the floor, on which the rags were spread to the depth of a foot, and where they remain for six hours, "unless we are pressed for time, in which case we change them more frequently."

They commenced disinfecting on the 15th of December last, and disinfect about 150 tons a week. We asked for the daily quantity disinfected. They said 20 tons. Sometime afterwards, however, they corrected this statement, and said they could only disinfect from 10 to 15 tons per day. At this time all their rags are sent to Stettin for shipment. There are no checks of any kind upon the process of disinfection. Anyone may go to the room, as the key is in the door, and it might be emptied and filled a dozen times without the "inspector" knowing anything about it. Any number of bales may be stenciled "disinfected" which they choose to mark, and when so branded they go to the United States without restriction.

We next visited the establishment of Lewy Bros, another large warehouse, which was full of rags, and there were piles of bales stacked in the yard outside as high as the second-story windows. The proprietors told us that they purchased their rags from other dealers and forwarded them to their branch house in New York, this method being more satisfactory than sorting and disinfecting them. They accept all certificates of disinfection which come with the rags, and send them to the United States without knowing where the rags came from or the processes of disinfection employed. They said, "We would not knowingly purchase rags where any contagious disease was epidemic." Being questioned closely upon this point, they said, "We make no special effort to find out where they come from or whether contagious diseases exist in the neighborhood, for this would be impracticable."

They do not regularly disinfect rags, but have a room which is used for this purpose "in case of necessity," and it was in use on the day of our visit. The room has 240 square meters floor space and is about 11 feet high. In it are two tiers of racks on which the rags are laid to the depth of 12 inches. The room has windows on both sides about 6 feet apart, which were not tight, as there were broken panes of glass in both upper and lower sashes. The volume of vapor in the room did not prevent entering for the purpose of examination. They told us their inspector came whenever he thought it necessary; that he is employed and paid by the firm, and is under no other supervision. There is no supervision of any kind over the process of disinfection, if such it can be called, as the doors are unlocked. They keep their own stencil plate and mark what bales they please. The sorting and disinfecting by this firm is a minor item, most of their rags being purchased on commission; but they state that they disinfect all rags here which have not been disinfected before arrival. In response to our inquiries they said that they employ about 80 women, and that not a case of contagious disease has ever occurred in their establishment that could be attributed to handling rags, and that they have never known a case of anthrax among the employés.

The members of this firm have lately gathered statistics from the rag warehouses of the Continent relative to the danger of contagion from rags, and they have published a pamphlet containing the results of their investigations, copies of which they gave us, which will be mentioned hereafter.

We next visited the warehouse of Samuel Meyer & Co., another large rag exporter. This firm also deals in paper shavings. They employ 120 women as sorters, who handle the paper shavings and other stuff. He had never known any of their sorters to have sore fingers (anthrax) or any form of contagious disease. They send their rags to America via Bremen or Stettin, as may be most convenient. He said that he shipped some rags to England, but none to Holland or Belgium; that he has in stock at this time about 300 tons. He said that he disinfects about 60 bales at one time, and that the process is under the supervision of a chemist who comes to see the rags distributed and the sulphur turned on; there is no other supervision, and the key of the door remains in the possession of the firm, and no seal is used. The disinfecting chamber is in the second story of a large warehouse, the room being about 30 feet square and 12 feet high. There are two windows in the room, but they are tight. The arrangements for introducing sulphurous-acid gas are different from any other place we have visited. On the outside of the room, next to the door, stands an iron cylinder about 5 feet high and 8 inches in diameter. A pipe is laid from the cylinder into the room along the ceiling, and from this depends a gas pipe. The cylinder contains sulphurous acid gas under pressure, which is furnished by a chemist in the city. In the disinfecting room there are no racks, the rags being piled on the floor. When all is ready the door is closed, "and the gas from the cylinder turned on for six minutes and then shut off," the rags being permitted to remain in the fumes for six hours. One cylinder, he said, "will furnish enough gas for fifty fumigations." Mr. Meyer said that his rags came from Prussia alone, and principally from around the city of Berlin, and that he received no rags from Saxony.

The other establishments in Berlin have no disinfecting chambers, and as we desired to move as rapidly as possible they were not visited.

The following forms are used by the consul-general in Berlin:

U. S. CONSULATE-GENERAL,  
Berlin, ———, 189 .

I, ———, consul-general of the United States of America at Berlin, do hereby certify that from official information received from the sanitary authorities of ———, dated ———, and on file with this consul-general, no cholera ——— prevails in or near the city of Berlin, and that to the best of my knowledge and belief no cholera or other contagious or infectious disease or diseases prevail at present in or near the city of Berlin or have come to my official notice.

—————,  
*Consul-General of the United States.*

U. S. CONSULATE-GENERAL,  
Berlin, ———, 189 .

I, ———, duly authorized agent (partner) of the firm of ———, Berlin, do solemnly and truly declare that each and every bale in the invoice No. ———, dated ———, 189 , of ——— bales of rags shipped by steamer ———, from ——— to ———, are domestic rags and not reshipments, and, further, that the rags thus shipped have neither been collected, packed, or otherwise placed or passed through any district or districts infected with cholera or any other infectious disease.

—————,  
*Of the firm ———.*



U. S. CONSULATE-GENERAL,  
Berlin, ———, 189 .

I, ———, consul-general of the United States of America at Berlin, do hereby certify that the signature of ——— at the foot of the above paper is his true and genuine signature, made and acknowledged in my presence, and that the said ——— is personally known to me.

In witness whereof, I have hereunto set my hand and affixed the seal of the consul at Berlin this date and year next above written.

—————,  
*Consul-General of the United States.*

It is worthy of remark that the firm of Lewy Bros., who have just published a pamphlet embodying statistics gathered from the principal rag establishments and paper mills in Europe, are among those dealers in Berlin who "solemnly and truly declare" before the U. S. consul-general that the rags shipped to the United States "have neither been collected, packed, or otherwise placed or passed through any district or districts infected with cholera or any other infectious disease." Yet they stated to us that they sent rags to the United States without knowing where they came from, and in response to direct inquiries said, "We make no special effort to find out where they (the rags) come from, or whether contagious diseases exist in the neighborhood, for this would be impracticable."

If the statistical matter furnished by the rag dealers to Lewy Bros., which they publish in the pamphlet, is as trustworthy as the information furnished by Lewy Bros. to the consul-general the accuracy of the statistics may be fairly called in question.

The pamphlet prepared by Lewy Bros. is entitled—

Die Cholera-Gefahr und der Lumpenhandel.

The cholera danger and the rag trade.

It is addressed to the Imperial Board of Health in Berlin, and purports to give the data obtained from 686 European paper and shoddy manufacturers and rag warehouses. It is not necessary to reprint the whole pamphlet because it contains much that is foreign to the present investigations. It first enumerates the difficulties experienced by those engaged in the business by reason of the embargo which is placed upon the movement of rags from cholera-infected countries, but it says that "the prejudice of the Government (German) against the trade in rags was well known, and that an embargo might be expected at any time," and indicates that the date of the embargo might have been determined by the German Government, so as to have enabled the dealers to stop the shipment of rags before the embargo took effect. It says, further, that the shipments of rags going "to the United States have been furnished with health certificates ever since 1885, and one German firm alone is said to have paid for that purpose consular fees to the sum of 20,000 marks." The pamphlet contains a list of fifteen questions which were sent out to those engaged in the rag trade, and to which they requested answers. In brief, the questions asked the length of time each dealer had been in the business, the number of employes, whether cholera had ever visited their place, how many employes were taken sick or died from that disease, whether any other disease or diseases occurred among the employes, and if so what they were and whether they could be undoubtedly caused by infection from rags; also, whether any of the diseases were probably caused by infection from rags. The pamphlet then contains the following: "The circulars were sent to all firms in Europe having any connection with the rag trade known to us and to those near us, but only to the largest paper mills having connections with the trade in rags in Germany. It is supposed that on account of the large consumption of wood fiber the paper mills were not much interested in the rag trade, especially in Austria, where a high duty is levied on the export of rags, thereby almost prohibiting

it. Several German paper mills have not sent replies to the questions proposed, even upon a second invitation. Many replies were unsatisfactory and incomplete, therefore it took time to get the addenda."

The answers to the questions are in the main so indefinite or so purposely evasive as to be valueless for exact data, but they show that there have been epidemics of several forms of disease in the establishments from which answers were sent. Following the answers published, it is found that from the German paper mills which sent answers—

No. 49 admits smallpox.

No. 51 admits smallpox from rags sent from a hospital in Dusseldorf.

No. 52 admits smallpox.

No. 53 admits smallpox.

From shoddy factories in Germany—

No. 141 admits smallpox, undoubtedly infected by rags.

No. 142 admits "28 men and women taken down with smallpox, infected by rags sent from France; were treated in a hospital. Other cases were taken with the disease and were treated at their homes."

From Austria the cases of so-called "rag disease" are reported, which will be mentioned in another place—

No. 22 admits 10 cases of rag disease.

No. 24 admits smallpox.

No. 25 admits rag disease.

No. 26 had 27 cases of rag disease in 3 epidemics, all ending in death.

No. 27 admits rag disease.

No. 28 admits rag disease.

No. 29 admits "a few cases of affection of the lungs."

No. 30 admits "a few cases of smallpox caused by infection from rags."

From Switzerland—

No. 3 says that in 1886 they had women sick with smallpox, supposed to have been infected from rags.

From England—

No. 126 says "three assorters were affected with smallpox some twelve years ago; it is thought that they caught the disease from assorting bad-smelling, dirty woolen rags."

No. 127. "Two cases of smallpox, which are supposed to be caused by infection from rags."

Among the most significant answers are these.

In the following, given in answer to our questions, we record the number of cholera cases, classifying as workmen those who did not sort rags:

No. 1. Paper mill (Eberswalde, 1866), 10 nonassorters taken sick, 5 died.

No. 10. Paper mill (Malmedy, about 1852), 5 to 8 nonassorters taken sick, a couple of them died.

No. 25. Paper mill (Calbe Saale, 1873), 1 nonassorter taken sick and died.

No. 27. Paper mill (Berlin, 1866), 1 nonassorter taken sick and died.

No. 35. Paper mill (Eberswalde, 1873), 3 nonassorters taken sick, 2 died.

No. 43. Paper mill (Glauchau, 1866), 1 assorter and 1 nonassorter taken sick, both died.

No. 27. Rag-trading house (Königsburg, 1866-73), 1 assorter taken sick.

No. 241. Rag-trading house (Hamburg, 1892), 1 assorter taken sick and died,

\* \* \* about 40 replies from Hamburg.

No. 274. Rag-trading house (Posen, 1866), 1 assorter taken sick and died.

No. 111. Paper mill (Arnau, 1852), 5 nonassorters taken sick.

No. 20. Paper mill (St. Petersburg, 1860-92), 1 assorter taken sick and died, also 135 nonassorters taken sick and 22 died.

No. 46. Rag-trading house (Saratoff, 1892), 2 assorters taken sick.

No. 47. Rag-trading house (Samara, 1892), 1 assorter taken sick.

The pamphlet was prepared to disprove the assertion that cholera was or might be propagated by means of rags, yet here they mention by name 13 establishments in which the work people had cholera.

While they do not say directly that the cholera was introduced by means of rags the language can not well be interpreted otherwise, for in speaking of those among the rag sorters who died they say "2 cases should be deducted (from the whole number), as infection from other causes had been established;" the inference is, therefore, that the other cases were infected by the rags. They say in relation to the cholera, "While it is true that the result of this inquiry is not infallible it shows the small number of cholera cases among the workmen in rags and speaks clearly against all embargo on the rag traffic."

Many of the answers admit the existence of disease at the establishments without specifying it, as follows:

"We have never found that rag sorters were sick more than other employés." Another said, "It is well known that the respiratory organs of those employed on rags suffer more than those, for instance, of paper assorters."

Again, "During smallpox epidemics, influenza, etc., our employés suffered very little." Another replied from Austria, after reporting deaths from "rag disease" as above, "The older sorters withstood the two last influenza epidemics better than the younger ones." Another answers, "Cases of lung inflammation among them (sorters) were milder than among the rest." Several respond that they have had "a few cases of smallpox." One in Austria answers (No. 182), "Let me observe that it is much better to burn immediately the old clothes which come from hospitals rather than to sell them, for fear they might be worn again and thus greatly increase the danger of spreading cholera."

Another answers: "Some cases of a skin eruption which may or may not have been caused by rags."

Another answers from Leghorn, Italy: "The number of cholera patients who have been employed in handling rags was less than those of other branches."

In the summary it is stated that "noncholeraic infection is either positive or not improbable in 29 establishments" from which answers were received. The authors then say: "We do not deny that infection, especially of smallpox, has occurred, but considering the great number of establishments and the number of years of observation we claim that the figures furnish no cause for a wholesale attack on the rag trade." And then they add the words following, which we italicize: "*Attention should be paid to the thorough disinfection of the clothing of smallpox patients before they are thrown among the rags.*"

The summary also shows that there were "170 cases of cholera, 38 of them fatal," in the several establishments from which they received replies, excluding 15 cases of this disease reported from the "machine shop" attached to a paper mill, which they say should not be added. It is significantly stated by them that "the field of observation is, therefore, not one that could wisely be considered preeminently exempt from cholera."

The most ardent sanitarian does not demand more than the authors of this pamphlet admit, to wit: That rags do convey contagion, and that thorough "disinfection of the clothing of smallpox patients" should be performed. Why they should limit "thorough disinfection" to clothing from smallpox patients is not clear, inasmuch as they report "noncholeraic infection" from rags in 29 places, one recommending that clothes from hospitals should be burned for fear of spreading the cholera.

No people in the world are better acquainted with the impossibility of accomplishing thorough disinfection of any rags picked up in the usual manner before they reach the large warehouses than the wholesale dealers, as it is impossible to



tell smallpox rags or infected rags of any kind from other rags. The only practical way to deal with them is to disinfect all of them; and this plan is absolutely necessary to prevent the introduction of infection wherever the rags are sent, and can only be properly done where large quantities of rags are handled.

The pamphlet does not inform us of the number of places in England to which the questions were sent. They give only three answers. Two admit infection of smallpox by rags; the other reports "state of health has always been good." If the questions were sent to all the rag dealers and paper mills in England a very large percentage of them did not reply correctly or the answers were not published, for it will be shown elsewhere that more than seventy outbreaks of smallpox, besides other forms of contagious diseases introduced by rags, have been reported in England after thorough investigations made by the health officers had established the facts; and it is also shown that many epidemics of disease have occurred in other countries introduced by rags.

The pamphlet contains an answer from one of the Austrian paper mills in response to the question as to what was meant by "rag disease," which is as follows:

"By rag disease is meant a malady only lately observed not unlike anthrax, and frequently so considered, which attacks those who handle the rags in paper mills, almost without exception the women, and which nearly always ends in death. The disease is supposed to be caused by the inhalation of the dust arising in large quantities in assorting and cutting rags.

"The disease shows itself with or without premonition, beginning with languor, fatigue, and a painful pressure in the stomach." "Then follow difficulty in breathing, oppression, anguish, often cough and pain in the chest, generally no fever; if so, only in the beginning. There is a weak but very rapid pulse, a subnormal temperature, and a bluish discoloration of the skin; the strength fails, and death occurs in from two to five days."

This disease has been observed in other places, as will be shown elsewhere.

The paragraphs selected from the pamphlet have a direct bearing upon the subject we were investigating, to wit, the liability of rags to carry contagion; and it furnishes interesting data in support of this view coming from a variety of sources and from those directly interested in the business.

February 1, 1893, arrived in Hamburg and called on Consul Estes, who informed us that there are a number of establishments where disinfecting processes are carried on, but owing to the embargo on rags from Hamburg they are now used for other things. Disinfection by sulphur is used in all of them, and the inspection of the methods is under the supervision of a chemist who is appointed by and under the control of the chamber of commerce. The chemists before entering on their duties are obliged to file an affidavit that they will properly perform the duties of the work assigned. The salaries of the chemists are paid by the merchants who use the disinfecting chambers. The following warehouses in Hamburg have disinfecting plants attached to them: P. H. Bauer & Co., J. Ferdinand Nagle, and Leopold Brandt. These merchants deal in various articles which require disinfection. The first visited was Leopold Brandt, who sells hides, feathers, and hair; he does not deal in rags. They were about to commence the process of disinfection of sundry bales of hair as we reached the warehouse. The room used was practically air-tight; it is built of brick, covered with stucco, and without windows, having only one door of entrance. The dimensions are as follows: 23 feet long, 11 feet wide, and 10 feet high. In this room 9 pounds of sulphur are burned at each disinfection. The hair is not unbaled, but the bales were ripped open in three places. Before our inspection had terminated Dr. Karl Enoch arrived. The sulphur was ignited; the door closed and locked. Dr. Enoch covered the key-hole with wax, and stamped it with his seal. He said that at the expiration of six hours he would return, break the seal, and open the door; but that it would be at

least four hours thereafter before the contents would be removed. He stated that it was an offense punishable by imprisonment for anyone to break the seal except himself.

Mr. Brandt said that the disinfecting process as we saw it went on every day; that he had more orders for hair, hides, and feathers than he could possibly fill.

In conversing with Vice-Consul Burke he said that he believed rags were being shipped from Harburg, a town opposite Hamburg, to Geestemünde for shipment to America. The consul does not allow old bagging, or flax waste, to be shipped from Hamburg, but in view of instructions received from the Treasury Department does not consider himself warranted in stopping the shipment of "new cuttings."

We next visited the rag warehouse of A. Wertheim & Co., who informed us that they had done no business in rags since August 25, 1892.

In Harburg is the warehouse of Mr. Solomon (the proprietor of the establishment at Hanover). We were informed by the manager that they shipped last week to England 600 bales of rags, and they expect to ship 400 more this week.

Accompanied by Consul Estes and Vice-Consul Burke we next visited the office of the directors of the Hamburg-American Packet Company, and met three of the directors; the object of the visit was stated, and after some conversation we were referred to Dr. Nash, who they said was employed by the company to supervise all matters of disinfection and the examination of emigrants.

Dr. Nash soon entered the room, and in conversation he stated that he had exclusive control of disinfection and of the medical examination of emigrants. He also said that he was one of the deputy health officers for the port of New York, but that he is paid a regular salary by the Hamburg-American Packet Company. The medical inspection of emigrants is not even supervised by the U. S. consul, nor is any question relating thereto referred to him, being carried on by two physicians in the employ of the company and under the supervision of Dr. Nash. At the date of our visit the company dispatched two steamers a week to New York, and they carried an average of 150 passengers in each vessel. Until the epidemic of cholera appeared here, which resulted in the suspension of the steerage traffic, the Hamburg-American Packet Company never carried second-class passengers except on their fast steamers. The ordinary slow vessels carry only first-class and steerage passengers; now the steerage accommodations have been transformed into quarters for second-class passengers. All ships of the company are disinfected and fumigated before sailing, this being done under the supervision of the police department of Hamburg; the officials send a certificate of disinfection to the U. S. consul for each vessel. The consul attaches to this document a certificate of authentication in addition to the usual bill of health.

Mr. Estes said that no clean bill of health had been furnished vessels leaving Hamburg since the 23d of August, 1892. Two vessels a month belonging to this line are now sailing for New York from the port of Stettin.

According to appointment, we met Dr. Nash at 2 p. m., and went to the baggage room of the Hamburg Company; there was very little baggage to be disinfected at the time of our visit. Trunks, boxes, and locked packages are treated, by rubbing their external surfaces with a solution of bichloride of mercury, 1 part to 500, but they are not opened. Goods in sacks are opened, and their contents exposed to the fumes of sulphur; for this purpose a lighter had been tied up close to the baggage room; the contents of the bales or sacks were transferred to the lighter and hung on clothes lines, and the hatches closed and covered with tarpaulins during the process of disinfection; this work was done daily under the supervision of Dr. Nash.

We then went to the examination room, where all passengers pass a medical inspection. There are present at these examinations a surgeon employed by the

steamship company, a police agent, and Dr. Nash. We visited the steamship company's docks, where we examined the steamship *Moravia*. She was being cleaned and painted throughout. The former steerage quarters in which cholera appeared during the summer of 1892 have been entirely remodeled and fitted up for second-cabin passengers. The steamship *Normannia* was also there; her refitting had been completed, and we were told that she would begin running to New York in March. We next inspected the barracks for emigrants. This is a large building in good sanitary condition. It is a temporary structure, and was finished and occupied just before the cholera epidemic appeared here in 1892. There are separate accommodations for men, single women, and families. There is a fairly good waiting-room, where refreshments may be had. The floor of this room, which is cement, was quite dirty, as the emigrants were constantly tramping in and out. The beds throughout the establishment are the usual iron racks holding four people, one above the other. The water-closets are cesspools, which we were told are cleaned out every day. There are good bathing facilities, and each emigrant is compelled to take a bath as soon as he arrives. The whole place is under the control of the police department of Hamburg. All emigrants coming to this place are brought direct to the barracks and are not allowed to enter the city. At the date of our visit there were 360 emigrants waiting for their ship to sail. Vice-Consul Burke stated that during the period of the epidemic he visited these barracks every day, and they were about the healthiest place in the city, only nine cases of cholera occurring there during the season.

The next morning, accompanied by Consul Estes, we went to Grasbrook, an island in the Elbe, lying between Hamburg and Harburg; we first inspected the disinfecting establishment of P. H. Bauer & Co. The building is of galvanized iron, riveted together so that it is practically air-tight, and has a felt roof; there are no windows, and only one small door; outside the building about 20 feet distant, there are three iron retorts for burning the sulphur; these retorts are connected with the interior of the building by three 5-inch iron pipes, which run underground and terminate in the center of the disinfecting chamber. The dimensions of the room are 40 by 40 feet and 16 feet in height. Mr. Bauer stated that his business was that of disinfecting by sulphur, and that he frequently disinfected hides, feathers, and wool. There are no racks in the building, but with this exception the plant is all that could be desired. Mr. Bauer said that he had as yet disinfected no rags, because Hamburg rags were not allowed to land in America. He said, "There is not the slightest doubt but that these rags are being sent to America by way of Geestemunde, as there are no restrictions on the movements of rags from one place to another in Germany, and, as it is impossible to tell Hamburg rags from any other rags, there is no reason why they should not go if their owners wished to send them." He said further that it was very easy to evade the regulations against the shipment of Hamburg rags, for, said he, "At Finkenwarder (a division of Hamburg), one side of the street is in Hamburg and the other in the province of Hanover, and it has never been forbidden to ship rags from Hanover." On the same island is the disinfecting establishment of J. Ferdinand Nagle, which has been recently built. It is constructed of wood, the roof covered with felt; no windows, and but one door. Outside the building is one large iron retort for burning sulphur, the funes of which are delivered into the chamber by a 5-inch iron pipe, placed underground; there are no racks in the place. Hides, wool, and feathers are disinfected both at this place and at Bauer's establishment. The process of disinfection is carried out under the supervision of one of the Government chemists heretofore mentioned.

February 4, 1893, we took the morning train for Hamburg, accompanied by Vice-Consul Burke, where we inspected the rag establishment of Solomon Bros., which is a large warehouse. They employ at this place 150 sorters, and, as usual, we



were told that there had never been a single instance of contagious disease among the employés. The elder brother stated that he had been in the business forty-five years and had never known a case of contagious disease or sore finger occurring among the sorters (but see p. 152, ante). He said they purchased their rags from small dealers, and they came from Scandinavia, Denmark, Schleswig-Holstein, Mecklinburg, Saxony, Westphalia, and the Rhine provinces, also from Hanover. He said they did not get rags from Russia or Austria, because of the export duty, which, in Russia, is 4 gold rubles per 100 kilos (about \$3.08 on 275 pounds), and in Austria the export duty is 4 gold florins per 100 kilos (\$1.92 for 275 pounds). We were shown over the entire establishment. Expressing surprise at the immense stock on hand, Mr. Solomon said there were about 5,000 tons of rags in stock; but the enormous piles indicated that this was a low estimate. The last shipment made direct to the United States by this firm was in the latter part of August, 1892. Mr. Solomon stated that there was no difficulty at all in shipping rags from infected districts to the United States if the exporters were disposed to do so, because they could be readily sent from one consular district to another. He stated that the English Government did not now require the disinfection of rags, and since restrictions had been removed, which had been recently done, they had been sending rags to that country. On the day of our visit to this place they had received an order from England for 1,000 bales of rags. We afterwards learned that these rags were all sent from England direct to the United States. We were told that they could now disinfect about 10 tons a day, but by working night and day they might increase the quantity to 15 tons. They said further that if they were permitted to ship rags direct to America they would be willing to increase their disinfecting plant to 25 tons a day. A good many rags are sold to mills in Germany, the Government requiring that all their official blank forms must be printed on paper that is made from rags. We next visited their disinfecting room, which is a large wooden shed built against a brick wall. In the roof there are numerous skylights. In the walls about the room there are a good many large cracks, and also in the several doors. At one end of the shed are two tiers of wooden racks which occupy about one-third of the floor space. At the time of our visit the racks were filled with old paper which they said they were about to disinfect. The dimensions of the room were 51 by 42 feet and 12 feet high. They said that they could disinfect in this room all of the material which they are now permitted to send to America, including "new cuttings." The disinfection, we were told, was done under the supervision of a Government chemist, Dr. Minthe. They acknowledged, however, that the inspector did not lock or seal the doors when he left the place, and that he did not remain on the premises during the process of disinfection, which they say lasts for six hours.

The proprietors indicated a willingness to erect a suitable building for disinfecting purposes which shall answer all the requirements of Department circular No. 143, providing it became necessary to do so.

In the evening we met the directors of the Hamburg-American Packet Company, and at their request explained to them the general features of the proposed quarantine law now before the Congress of the United States. They expressed themselves as being much pleased with the provisions of the law, and said they would rejoice to see a uniform quarantine administration in the United States, and would very gladly cooperate in any way they could to make such a law successful, whether the requirements would demand concert of action on this side or only at ports in the United States.

The directors of the Hamburg-American Packet Company afforded every possible facility for making all the examinations we desired, in every part of their extensive wharves and docks, through their vessels, and in every department connected with the forwarding of emigrants and the disinfection of their baggage, and everything was found in excellent condition.

## CHOLERA IN HAMBURG.

The first case of cholera in this city officially reported was on the 23d of August, 1892. It is said, however, by the committee of the senate who have charge of the sanitation of the city, that the first case occurred on the 18th of August, and it has not yet disappeared. On the date of these notes, February 1, 1893, a case was officially reported in the Neustadt, one of the quarters of the city. The official figures given by the Hamburg authorities for the epidemic are as follows: From the 18th of August, 1892, until February 1, 1893, the total number of cases was 18,000; total number of deaths, 8,200.

The financial loss to the city as a consequence of the epidemic is estimated at 15,000,000 marks a day. Vice-Consul Burke said that the clean bill of health which he authenticated for the steamship *Normania* was dated on the 16th of August, two days before cholera was reported, and a week before it was officially announced.

There can be little if any doubt that the authorities of Hamburg endeavored to prevent the existence of cholera from becoming known, and it was not till it became a matter of general conversation on the streets that the presence of the disease in epidemic form was officially announced.

The drainage of the city is well arranged, but branches of the Elbe River radiate through the city in various directions, and being stagnant become very filthy. The sewers do not discharge directly into the branches and canals, but the refuse material finds its way into them by the action of the tides from the main river into which the sewers and drains empty, thus rendering the stagnant waters a constant menace to the city. The water supply is taken from the Elbe above the city, and when the new filtering apparatus and other measures, which are in process of construction at this time, shall have been completed, it is believed that the water supply will be pure. It is stated that the frightful ravages of the cholera were due to the fact that the river water became contaminated and carried the germs of the disease into all parts of the city, by reason of the fact that the methods of filtration were at the time imperfect. Located in various parts of the city there are about 70 wells, from which drinking water is raised by pumps. We saw several of these which had notices upon them stating that the water was potable and free from cholera germs, the notice in each case being signed by the cholera commission. Around these pumps there seemed to be no precautions taken to prevent the sloppy water from finding its way back into the well. As at present managed these wells may become a very dangerous element in spreading disease.

On the day before our visit Dr. Koch inspected the city of Hamburg, and we were told by the authorities that he approved all the measures taken to improve its sanitary condition, including the arrangement for the new water supply; and that he believed that the sanitary authorities were now in a position to hold the disease in check.

The following blanks are in use at this consulate:

## BILL OF HEALTH.

We, the senate of the free and hanseatic city of Hamburg, do, at the request of Capt. ———, master of the ——— vessel called ———, moored in the port of this city, and bound for ———, by these presents certify and attest that neither in the city nor in the port and its vicinity does exist any extraordinary, contagious, epidemical disease which could be transferred by the ship, her crew, or cargo.

In witness whereof, we have granted these presents and caused our usual seal to be affixed thereto.

HAMBURG, ——— the ———, 1892.

To this is affixed the seal of the senate. Upon this bill of health the U. S. consul affixes the following:

U. S. CONSULATE, *Hamburg.*

I, ———, consul of the United States of America at Hamburg, do hereby certify that the seal of the Hamburg senate and signature of ———, secretary, to the instrument of writing hereto annexed, are true and genuine, and as such are entitled to full faith and credit.

In testimony whereof, I have hereunto subscribed my name and affixed my seal of office this — day of ———, 189 .

It was the refusal of the consul to attach this certificate to the senate bill of health as above, because he believed the cholera existed in epidemic form in Hamburg, that first called public attention to the actual condition of affairs.

## BILL OF HEALTH.

## CONSULATE OF THE UNITED STATES OF AMERICA,

*Hamburg, ———, 1892.*

I, the undersigned, consul of the United States of America for the port of Hamburg, do hereby certify that the ——— called the ———, of ———, of the registered burden of ——— tons, whereof ——— is master, navigated by ——— men, and having on board ——— passengers, being in all ——— persons on board, is about to leave this port for ———.

I hereby further certify that in this port and vicinity and among the shipping thereof good health prevails, without any suspicion of plague or cholera or any epidemic disease whatever.

Given under my hand and seal at this consular office the day and year above written.

———,  
*U. S. Consul.*

Pasted upon each bale or parcel or package is the following:

"Certificate of disinfection for within goods authenticated by me ———, 189 .

———,  
"U. S. Consul."

February 7 we visited Stettin and called on U. S. Consul Dr. J. C. Kellogg, who informed us that since the 25th of August, 1893, there have been but three shipments of rags from Stettin direct to the United States, and they were sent January 7, 10, and 13, 1893, and that they went by way of Hull, England.

The following week a large shipment was to be made on the steamer which will then leave for the United States direct. There are here three exporters of rags—H. J. Levy, Berthold Levy, and A. Joseph—all having disinfecting plants; and besides rags, they disinfect hair, hides, feathers, jute, and old bagging. Disinfection is done under the supervision of the consul and a Government chemist, Dr. Gustave Laube.

The consul informed us that he intended to be present at all disinfections and watch the entire process, and that he certified the signature of the chemist, Dr. Laube. It is the custom of both these gentlemen to go to the disinfecting room and see the rags distributed on the racks and the sulphur ignited, the door locked, the keyhole covered with sealing wax, on which is stamped the chemist's seal, which may not be broken thereafter except in the presence of one of these officials. We first visited the disinfecting room of H. J. Levy & Co., situated on the second floor of the warehouse. Its dimensions are 35 by 20 feet and 8 feet high. In it they disinfect 48 bales at a time. He said the rags came mostly from the province of Pomerania. They employ 37 sorters, none of whom ever had a contagious disease or "sore finger" which could be traced to the rags. Most of the rags go to the United States.



February 8, visited the establishment of A. Joseph, accompanied by the consul and Dr. Laube. The disinfecting room is a brick building, with wooden roof and skylight. Two large racks cover the surface of the room, the lower one resting directly on the floor, the rags being piled about 1 foot high on each. The room is tight, and an excellent one for the purpose when the lower rack is lifted from the floor. In it they can disinfect 15 tons at one time. The rags are sent to the United States, sometimes via Hull and sometimes direct. He employs 45 sorters, and he said that sometimes they had sore fingers, which he thought was produced by their coming in contact with the iron cradles on which the rags are placed before sorting. He said it was customary when this soreness came on for them to stop work for a few days and the trouble passed away. He had never known a case of contagious disease among his sorters which could be traced to the rags.

The next place visited was Berthold Levy's, who has a disinfecting chamber on the third floor of his warehouse; in it a wooden rack covers the floor space, on which rags are laid 6 inches deep. He disinfects 10 tons at one time, most of his rags going to the United States. He employs 50 sorters, and had never known any of them to have contagious disease or sore finger. The disinfecting room is well adapted for the purpose intended.

U. S. Consul Kellogg, who is a physician, has taken unusual interest in the matter of rag disinfection, as the following communication made to the Department of State demonstrates:

U. S. CONSULATE, *Stettin, March 25, 1893.*

SIR: In order to test the efficacy of the disinfection of rags by means of sulphurous-acid gas, as prescribed by the circular of the Treasury Department under date of August 19, 1892, Dr. G. Laube, a sworn expert analytical and technical chemist at the royal court of this city, and I, who have had much experience as a former pupil of the eminent analytical chemist, Geheimhofrath, Prof. Dr. R. Fresenius, of Wiesbaden, Germany, in analytical work, made recently a series of qualitative and quantitative analyses of disinfected rags which had been disinfected by the different rag exporters of this city under our personal direction and supervision. The disinfection of rags is, and has always been, made in the evening.

The rags, after the disinfecting rooms are closed and sealed by Dr. Laube and myself, are left exposed during the night to the sulphurous-acid fumes. Previous to the disinfection the rooms are made, so far as possible, air-tight.

The samples of disinfected rags we examined and tested qualitatively and quantitatively were collected in the morning after the disinfection had taken place and after the rooms had been aired. The samples were taken as follows:

*1. From racks which are parallel to the floor, elevation one-half to 1 foot.*

- (a) From the interior of the rag piles.
- (b) From the exterior of the rag piles.

*2. From racks which are parallel to the floor, elevation 3 to 8 feet.*

- (a) From the interior of the rag piles.
- (b) From the exterior of the rag piles.

*Preparation of the samples for the qualitative analysis.*

Two hundred and fifty grams of each sample were macerated with 1,000 grams of water in glass vessels. The percolate thus obtained measured 200 c. c., which represented 50 grams of disinfected rags. To this 200 c. c. of percolate 5 c. c. of dilute sulphuric acid were added, transferred into a retort, and by means of a Liebig condenser distilled until the distillate amounted to 150 c. c. To this 50 c. c. of water were added, increasing the volume of the liquid to 200 c. c., which was used for the tests as follows:

*Chemical tests of sulphurous acid  $\text{SO}_2$  (the smell of  $\text{SO}_2$  gas was distinctly present).*

1. Reaction upon metallic zinc plus dilute muriatic acid, which caused sulphureted hydrogen gas to be generated. Proof of test with lead paper, causing the same to become brownish black in color.

2. Reaction upon nitrate of silver solution, causing a white, cheesy precipitate of  $\text{Ag}_2\text{SO}_3$ , which on boiling turns gray, caused by the precipitation of metallic silver.

3. Reaction upon sulphureted hydrogen gas, causing a milky-white coloring of the liquid, due to the precipitation of sulphur.

4. Reaction upon chloride of gold, causing on boiling a purple-brown precipitate of metallic gold.

5. Reaction upon mercuric nitrate, causing on boiling a gray precipitate of metallic mercury.

The above reactions were obtained readily from each sample of disinfected rags tested, while a counter test of samples of nondisinfected rags gave none of the above characteristic reactions of sulphurous acid.

#### QUANTITATIVE ANALYSIS.

These analyses were made to ascertain the quantity of sulphurous acid absorbed by the samples of disinfected rags examined. The preparation of the samples was made in the same manner as for the qualitative analysis; 250 grams of each sample were collected. The percolates were distilled until the several distillates amounted to each 100 grams, which represented 25 grams of disinfected rags. Each 100 grams distillate was treated with permanganate of potassium solution (titration method) of such a concentration that 1 c. c. of the solution would neutralize 0.005 gram of sulphurous acid.

The following results were obtained:

(A) *Samples taken from racks which are parallel to the floor, elevation one-half to 1 foot.*

Sample No. 1, from the interior of the rag piles, contained 0.026 gram  $\text{SO}_2$  in 25 grams rags.

Sample No. 2, from the exterior of the rag piles, contained 0.042 gram  $\text{SO}_2$  in 25 grams rags.

(B) *Samples taken from racks which are parallel to the floor, elevation 3 to 8 feet.*

Sample No. 3, from the interior of the rag piles, contained 0.038 gram  $\text{SO}_2$  in 25 grams rags.

Sample No. 4, from the exterior of the rag piles, contained 0.058 gram  $\text{SO}_2$  in 25 grams rags.

(C) *Samples taken from racks which are parallel to the floor, elevation one-half to 1 foot from the interior of the rag piles.*

Sample No. 5 contained 0.068 gram  $\text{SO}_2$  in 25 grams rags.

Sample No. 6 contained 0.026 gram  $\text{SO}_2$  in 25 grams rags.

Sample No. 7 contained 0.047 gram  $\text{SO}_2$  in 25 grams rags.

Sample No. 8 contained 0.046 gram  $\text{SO}_2$  in 25 grams rags.

Sample No. 9 contained 0.034 gram  $\text{SO}_2$  in 25 grams rags.

(D) *From the interior of the rag piles (three-eighths foot elevation).*

Sample No. 10 contained 0.070 gram  $\text{SO}_2$  in 25 grams rags.

Sample No. 11 contained 0.048 gram  $\text{SO}_2$  in 25 grams rags.

Sample No. 12 contained 0.105 gram  $\text{SO}_2$  in 25 grams rags.

Sample No. 13 contained 0.085 gram  $\text{SO}_2$  in 25 grams rags.

Sample No. 14 contained 0.049 gram  $\text{SO}_2$  in 25 grams rags.

The above results show that the disinfections of the rags from which the samples were taken were effective. A better control, however, of the rags disinfected by means of sulphurous-acid gas can best be obtained by having rags first baled and then disinfected in vacuum.

For obvious reasons the disinfection of rags on this side, by means of superheated steam or boiling water, is impracticable. These two methods are better adapted for those disinfections made in the ports of entry in the United States.

I have the honor to be, sir, your obedient servant,

JAMES C. KELLOGG,  
U. S. Consul.

To the Hon. WILLIAM WHARTON,  
*Assistant Secretary of State.*

The experiments show that when properly disinfected the sulphurous-acid gas penetrates all the rags distributed upon the racks.

Relative to methods taken for the supervision of emigrants sailing from this port, Consul Kellogg stated as follows:

The regulations of the city require that all passengers sailing from Stettin must be examined by the police authorities, but Dr. Kellogg states that the official on duty endeavored to conform to his wishes in every respect, and that he himself is present at the examinations. The physician who makes the examinations is paid by the Hamburg Packet Company.

The number of emigrants sailing from Stettin annually number from 4,000 to 6,000.

The vessels are disinfected by the police sanitary authorities, Dr. Kellogg being present.

It has been customary when the ships are being disinfected to place the baggage of the emigrants in the hold of the vessel, where it is fumigated by sulphur, all trunks and boxes being opened, but the contents are not removed. The baggage of Russian Jews is disinfected by steam. At present no emigrants are sailing from this port. There were but 16 cases of cholera in Stettin during the year; the first case September 11, 1892; the last case October 16.

The following are the blanks in use at this consulate:

U. S. CONSULATE,  
Stettin, ———, 189 .

I, ———, duly authorized agent (partner) of the firm of ———, Stettin, do solemnly and duly declare that each and every bale in the invoice No. ———, dated ———, 189 , of ——— bales of rags shipped by steamer ——— from ——— to ——— are domestic rags and not reshipments; and, further, that the rags thus shipped have neither been collected, packed, or otherwise placed or passed through any district or districts infected with cholera or any other infectious or contagious disease.

—————,  
Of the firm of ———.

U. S. CONSULATE,  
Stettin, ———, 189 .

I, ———, consul of the United States of America at Stettin, do hereby certify that the signature of ——— at the foot of the above paper is his true and genuine signature, made and acknowledged in my presence, and that the said ——— is personally known to me as a creditable person.

In witness whereof I have hereunto set my hand and affixed the seal of the consulate at Stettin this day and year next above written.

—————,  
Consul of the United States.



U. S. CONSULATE,  
Stettin, ———, 189 .

I, ———, consul of the United States of America at Stettin, do hereby certify that from official information received from the sanitary authorities of Stettin, dated ———, and on file in this consulate, no cholera or other contagious diseases prevail in or near the city of Stettin, and that to the best of my knowledge and belief no cholera or other contagious disease or diseases prevail at present in or near the city of Stettin, or have come to my official notice.

—————,  
*Consul of the United States.*

STETTIN, ———, 189 .

I herewith certify that I have ordered and watched personally over the disinfection of ———, marked ———, and that this has been done in conformity with the regulations prescribed for it, to wit: The disinfection took place in a tight and locked room filled with sulphurous acid gas made by burning 4 pounds of roll sulphur to each 1,000 cubic feet.

Dr. G. LAUBE,  
*Sworn Chemist to Law and Commerce.*

U. S. CONSULATE,  
Stettin, ———, 189 .

I, ———, U. S. consul at Stettin, do hereby certify that ——— bales of (or hides, hair, or wool), marked ———, were put into an air-tight room for disinfection according to methods prescribed by the circular of the U. S. Treasury Department, dated August 19, 1892, under the personal direction and supervision of a sworn analytical chemist of this city and myself.

Given under my hand and the seal of this consulate the day and year as above written.

—————,  
*U. S. Consul.*

U. S. CONSULATE,  
Stettin, ——— 189 .

I, ———, U. S. consul at Stettin, do hereby certify that the hold and steerage quarters of the ———, leaving this port for the port of ———, have been disinfected under my supervision, according to the following methods:

1. Cleansed with bichloride of mercury solution, 1 part to 1,000.
2. Flushed with water.
3. Exposed to sulphurous acid gas for twelve hours.

I also certify that the effects of the steerage passengers, excepting those of the Russian emigrants, have been disinfected according to method No. 3 above mentioned; that the effects of the Russian emigrants have been disinfected by being exposed one hour to steam heat and that the Russians themselves have been bathed and kept not less than one week in the isolated barracks where they had been examined.

Given under my hand and the seal of this consulate the day and year as above written.

—————,  
*U. S. Consul.*

STETTIN, ———, 189 .

By reason of official investigations made, I herewith certify that the city of Stettin and environs are free from infectious and contagious diseases and that the state of health here is very good.

Dr. SHULZE,  
*The Medical and Sanitary Inspector.*  
(Kreisphysicus.)

February 10, left Berlin for Dresden and called upon U. S. Consul Aulick Palmer, who explained to us the method employed by him for supervising the disinfection of rags.

First, he requires the only exporter here, Barth & Son, to furnish a written statement from any steamship or railway company conveying the rags, showing where the rags were put on board; and he exhibited to us the original statements made by the transportation companies certifying at what places the rags were put on their respective lines. These certificates are signed by the railway superintendent at Reisa, where the rag warehouse is located, also by the agents of the steamboats which carry the rags. These certificates show that all rags received at this place come from southern Germany. In addition to these certificates the consul requires an additional certificate from the town authorities of Riesa, in which they state that, to the best of their knowledge and belief, the rags come from towns which are not infected by cholera or other infectious diseases. Next, the consul employs an inspector, who is also the superintendent of disinfection, whose business it is to go to Riesa whenever the disinfecting rooms are ready, who seals all doors and openings with the consular seal, notes the hour of closing the room in a book that is kept for that purpose, which we saw; also the hour of opening the same. He keeps the key in his possession during the period of fumigation, and when the fumigation is complete (at the end of six hours) he breaks the seal over the keyhole and unlocks the door, and the rags are then thrown down chutes into the room below, where they are baled in the presence of the inspector; he then stencils the bale, and marks his initials with the date and number of the bale under the stencil; then the rags are released by him for shipment. The number of bales reported by the inspector to the consul must of course tally with the number of bales covered by the invoice. Old bagging and flax waste are disinfected, but "new cuttings" are not, because an order from the Treasury Department admits them without. Here, as at all other places visited, they come to the warehouse mixed with all sorts of rags.

The inspector acts independently of the proprietors and assumes the supervision of the rags from the time that they are distributed upon the racks until they are baled and ready for shipment.

After obtaining this information we visited the establishment at Riesa. It is a large warehouse located on the river Elbe; they employ 150 sorters, all women. The proprietor told us that "nearly every one of the sorters is affected with some sort of throat trouble which the doctor called bronchitis, and which is caused by the 'rag dust' arising from the 'cradles' on which the rags are cut or torn to pieces; and that the difficulty lasted about four weeks from the time the sorters began work. During this period they have a severe cough and some are compelled to quit work."

We visited the sorting room and saw the process. While the room was fairly ventilated it was still full of rag dust, which had the bad odor which we had noted in all other similar establishments. We visited the disinfecting chamber, in which there are two tiers of racks about 2 feet above each other; the racks were being filled with rags at the time of our visit, to the depth of from 2 to 3 feet. From 150 to 200 bales are disinfected at each time. The disinfecting rooms were not tight and there were broken panes of glass in them, and the excessive depth of the rags on the racks prevented perfect disinfection, and we so informed the inspector, who promised to correct these imperfections.

The proprietors said that while it was desirable and they wished to get rags from noninfected communities, yet it was impossible for them to tell where the rags were gathered, because the small dealers from whom they bought received rags from ragpickers who went, no one knew where. Most of the rags go from here to Boston and New York via Bremen. The proprietor said that formerly

many rags came from Russia, but at present they are forbidden to enter Germany. Rags from Bohemia are much sought after because they are linen, and most of the cloth is handmade and very strong, furnishing material for the manufacture of the best grades of paper. Russian rags are sought for the same reason.

Before leaving Germany we obtained a copy of the new law relating to the prevention of contagious diseases, which we give herewith.

[From the Deutsche Reichs-Anzeiger and Königlich Preussische Staats-Anzeiger of February 6, 1893. Official organ.]

#### SKETCH OF THE LAW IN RELATION TO THE EXTIRPATION OF CONTAGIOUS DISEASES, DANGEROUS TO THE PUBLIC HEALTH.

We, William, by the grace of God German Emperor, King of Prussia, etc., decree in the name of the Empire with the consent of the Bundesrath (Federal Council) and Reichstag (Imperial Diet) as follows:

##### NOTICE.

SECTION 1. Each case of sickness and each case of death caused by cholera (Asiatic), spotted fever, yellow fever, plague (Oriental), smallpox; also, each case suspected to be one of these diseases must be immediately reported to the local police authorities and to the physician appointed by the Government; furthermore, each case of typhus of the intestines, diphtheria, including croup, relapsing fever, dysentery, scarlatina, must be immediately reported to the local police authorities.

If the place of residence of a patient is changed it must be reported at once to the local police authorities of the new place.

These regulations may, by a resolution of the Bundesrath, also refer to other contagious diseases.

Regulations requiring other legal notice are not affected by the above.

SEC. 2. This notice must be given, in the absence of the first-mentioned party, in the order as they follow:

(a) By the attending physician; (b) by the party attending the patient; (c) by the head of the family; (d) by a member of the family, who is of age and lives in the same house; (e) by other members of the household; (f) by the owner or occupant of the house in which the case of sickness or death occurred.

SEC. 3. Each case of puerperal fever or death caused by it, even if only suspected, must be immediately reported by the attending physician, or in the absence of one by the midwife, to the Government physician appointed for the district in which the case occurs.

SEC. 4. In case of disease or death in a public hospital, lying-in hospital, nursery, prison, or other similar institutions, the superintendent of the same, or the party appointed by him for that duty, must make report. For all cases of disease or death occurring on board of a vessel or raft report must be made by the captain or by the party appointed by him for that duty.

The Bundesrath has the power to enact regulations as to whom the captain or his deputy shall report.

SEC. 5. Notice may be given verbally or in writing. The local police authorities must furnish, upon request, notification blanks free of cost.

##### *Discovery of diseases.*

SEC. 6. The local police authorities must at once inform the Government physician when they hear of any outbreak or of a suspicious case of a contagious disease enumerated in section 1. The physician must at once investigate the matter and the cause of the disease, and must at once report to the police authorities whether or not the outbreak or suspected case is established.



In extreme cases, the investigation may be made by the Government physician without waiting for instructions from the local police authorities.

In places of more than 10,000 inhabitants the rules given in section 1 must be observed, even when cases of disease or death occur in localities separated from the others and formerly not affected,

After the establishment of the disease the Government physician, in conjunction with the local authorities, will investigate the several cases so far as is necessary for the purpose of following up the spread of the disease locally and in regard to time.

In cases of cholera, spotted fever, yellow fever, plague, and smallpox, the administration may order an investigation in each case of disease or death.

SEC. 7. The Government physician has the right to examine the patient or the dead body, also to make the necessary examination as to the origin of the disease and of the case itself. The attending physician may be present at these examinations. If there is the slightest suspicion of the deceased having succumbed to cholera, spotted fever, yellow fever, plague, smallpox, typhus of the intestines, or relapsing fever, an autopsy may be made to establish the disease, if such is advisable in the opinion of the Government physician.

The parties mentioned in section 2 and section 4 are bound to give all information as to the origin and the course of the disease, when so requested by the Government physician.

SEC. 8. If the Government physician reports that an outbreak of the disease has been established, or that the suspicion of an outbreak is well founded, the local police authorities must at once take all the necessary measures for protection.

SEC. 9. If the outbreak of cholera, spotted fever, yellow fever, plague, or smallpox has been established, the local police authorities will at once make this fact publicly known. The number of cases of sickness or death must be published at short intervals.

SEC. 10. If there is danger of delay, the Government physician is authorized to order the necessary measures for protection, to prevent the spread of the disease, without notice from the local police authorities. In such cases the warden of the place must obey the instructions of the Government physician, who again will immediately inform the local police authorities of the means adopted.

#### *Measures for protection.*

SEC. 11. To prevent the spreading of contagious diseases (sec. 1), the regulations as given in sections 12 to 20 for the isolation and inspection may be ordered by the police authorities.

Opposition to these regulations will not postpone their enforcement.

SEC. 12. Sick or suspected parties may be subjected to examination, and in case they are houseless or homeless, or without a fixed residence, or tramps, they may be restricted in the selection of their place of abode and work.

SEC. 13. The administration may issue an order for the respective districts or parts thereof, that parties coming within a prescribed time from districts infected with cholera, spotted fever, yellow fever, plague, or smallpox, must report their arrival verbally or in writing to the local police authorities.

SEC. 14. Parties affected with or suspected of cholera, spotted fever, yellow fever, plague, smallpox, diphtheria, relapsing fever or scarlatina, may be isolated. This rule also holds good in cases where parties are suspected of infection.

The head of the household, where there are suspected or sick persons, is bound to make such arrangements that all those coming in contact with or attending to the suspected or affected persons are isolated from the rest.

If this isolation can not properly be affected, the government physician may order his transfer to a hospital or any other suitable place.

The transfer and isolation of parties suffering from typhus of the intestines or dysentery may be ordered when the conditions or the location of the rooms used are such as to create a fear of spreading the disease.

Houses in which there are patients suffering with cholera, spotted fever, yellow fever, plague, or smallpox may be marked or indicated on the outside. Intercourse with professional attendants may be regulated.

SEC. 15. The Government has the power for the time that the danger of the disease lasts (a) to order measures necessary to prevent the spreading of cholera, spotted fever, yellow fever, plague, smallpox, typhus of the intestines, in localities where they may appear, by regulating the production, treatment, keeping and sale of articles likely to disseminate these diseases, also to order a sanitary inspection for this purpose; (b) to subject all persons engaged in shipping, rafting, or other modes of transportation to a sanitary supervision, and to exclude from transport all sick and suspected persons, also such articles as may contain the germ of contagion; also to restrict the shipping and rafting to certain hours of the day; also to exclude all such articles from the freight traffic as indicated in a; also to limit or to prohibit the holding of marts, fairs, or other institutions likely to draw large crowds; (c) to prohibit the export of articles named in a from such localities where cholera, spotted fever, plague, or smallpox exists.

SEC. 16. Young people from houses where a contagious disease (sec. 1) exists may be temporarily kept from school. For other protective measures for schools the existing laws are applicable.

SEC. 17. In places where cholera, spotted fever, plague, smallpox, typhus of the intestines, or dysentery exists, or is threatened, also their environs, the use of water from wells, ponds, lakes, ditches, and hydrants may be prohibited, and the use of public bathing grounds or washing institutions may be restricted and prohibited.

SEC. 18. The evacuation of rooms and houses in which cases of cholera, spotted fever, yellow fever, smallpox, typhus of the intestines, relapsing fever, and dysentery have occurred may be ordered whenever, in the opinion of the Government physician, it is necessary, and when the occupants are otherwise provided for suitably and free of cost.

SEC. 19. All articles and rooms which have been exposed to infection must be disinfected. Luggage and merchandise may be disinfected when spotted fever, plague, smallpox, and other diseases are justly suspected as being infected.

If disinfection can not be had, or if it is too expensive, the articles may be destroyed.

SEC. 20. Special means of protection may be ordered for the preservation, the confining, the transportation, and the burial of the bodies of persons having died of cholera, spotted fever, yellow fever, plague, smallpox, diphtheria, or scarlatina.

SEC. 21. Medical treatment may be ordered to prevent spreading of contagious diseases of the eyes. The patient in that case is entitled to medical treatment free of cost.

SEC. 22. The Bundesrath has the power to enact special laws to serve as protective measures, as given in sections 12 to 21, particularly in regard to disinfection.

SEC. 23. The proper authorities may compel the communities to make such arrangements as will be necessary to combat contagious diseases (sec. 1)

SEC. 24. To prevent the introduction of contagious diseases from foreign countries, (a) the import and transport of merchandise; (b) the admission of seagoing and such vessels as are used in the passenger and freight trade; (c) the admission and transportation of parties coming from infected countries, may be restricted or even be prohibited.

The Bundesrath has the power to issue additional regulations in reference to this. As far as they relate to the sanitary inspection of vessels they may include the shipping traffic between German ports.

SEC. 25. When a contagious disease (sec. 1) has broken out in a foreign country, or in a coast district of the Empire, the Chancellor of the Empire or, for the nearest threatened state of the German Federation, the Government of such state, in conjunction with the Chancellor, shall determine when and to what extent the regulations of section 24 shall be enforced.

SEC. 26. The Bundesrath has the power to pass laws requiring the issuance of health certificates for vessels sailing from German ports.

SEC. 27. If a contagious disease (sec. 1) breaks out in an adjoining country the proper authorities may close all marts, fairs, and other institutions likely to draw large crowds, within the threatened district, or temporarily restrict the same.

#### *Indemnity.*

SEC. 28. Articles damaged or destroyed by disinfection ordered by the authorities will be paid for, excepting such as come under section 32 and section 33.

SEC. 29. Provisions as to (a) who has to pay and from what fund; (b) within what time the claim must be made; (c) how the appraisement is to be made, are made under the existing laws. If there are no laws to cover such cases, reimbursement will be made by the counties or districts in conformity with the decision of the administration (Government).

SEC. 30. Compensation is allowed for the original value of the article and not for the value as represented after disinfection. If the article is only damaged or only partly destroyed the value of what remains of the article will be deducted from the original.

SEC. 31. Compensation is paid to him in whose keeping the article was when disinfected, if no other claimant appears. When this payment has been made all claims under section 28 are void.

SEC. 32. No compensation will be allowed under this law (a) for articles the property of the Empire, of a state of the Federation, or of communal corporations; (b) for articles exported or imported in contravention of section 15 (c) and section 24.

SEC. 33. No claim for compensation will be allowed (a) if the party know or ought to have known that the damaged or destroyed articles were already infected at the time they became his property; (b) if the party in whose keeping the damaged or destroyed articles were, caused them to be disinfected in violation of this law.

#### *General directions.*

SEC. 34. All arrangements *pro bono publico* for the supply of water for drinking or household purposes and the removal of decayed matter are under the supervision of a Government official.

The communities must see to the removal of all that is dangerous to public health; they may be compelled at any time to make such improvements as mentioned in the first part of this section, when they are necessary for protection against contagious diseases (sec. 1). The proceedings under which the communities may be compelled to make such arrangements are governed by the existing laws.

SEC. 35. Government physicians in the sense of this law are those appointed by the Government.

In the case of the Government physician being prevented, or for other reasons, another physician may be employed. The latter is authorized under this order to attend to all such duties as are conferred under this law upon the Government physician.

SEC. 36. The Government has charge of all measures for protection and suppression. The duties of the courts and the levying of expenses are fixed by existing laws. The Government decides what is meant by "community," communal corporation, and "county."



SEC. 37. The states of the Federation are obliged to assist each other in the extirpation of diseases dangerous to public health.

SEC. 38. The execution of the protective measures are in charge of the military or naval authorities, when the parties concerned (a) belong to the army or navy; (b) are quartered in Government buildings or vessels, or such chartered by the Government; (c) are military persons or troops of the army or navy on the march or transport, also their equipment; (d) also all grounds and appliances used by the army or navy.

These laws do not interfere with the movement of troops or control meetings.

All military and police authorities must at once notify each other of any outbreak of a contagious disease (section 1), or if such is suspected.

SEC. 39. The issuance of all protective measures relative to railroad, mail, and telegraph traffic, coming under this law, devolves entirely upon the State or Imperial authorities. Restrictions of traffic and orders for disinfection can not be issued by the police in regard to employés and laborers of railroad, post, and telegraph departments when on duty or when detailed for special duty at some other place than where domiciled.

SEC. 40. It is the duty of the chancellor of the Empire to see that these laws and regulations are properly observed. If measures are necessary for combating cholera, spotted fever, yellow fever, plague, or smallpox, threatening several states of the Federation, the chancellor, or a commissioner appointed by him, is authorized to issue the necessary orders for uniform arrangements of the several authorities, and in cases of emergency to send instructions at once to the state authorities.

SEC. 41. If an outbreak of cholera, spotted fever, yellow fever, plague, or smallpox has been established at a place, the Imperial board of health must at once be notified. The federal council is authorized to decide whether or not the Imperial board of health shall be notified of the cases of sickness or death.

SEC. 42. An Imperial council is formed in connection with the Imperial board of health. The transaction of business is fixed by the chancellor; the members are elected by the federal council.

It is the duty of this Imperial council to assist the board of health in the fulfillment of its task; it shall advise the authorities, when requested; it may communicate directly with the authorities for any information desired, or send a deputy, to make his investigations with the assistance of the respective authorities.

#### *Punishment and fines.*

SEC. 43. Whoever knowingly breaks the export interdict, issued in conformity with section 15 (c); whoever knowingly, and before they have been disinfected, appropriates for his own use or the use of others any wearing apparel, linen, bedding, or other articles worn by parties affected with a contagious disease, or which have been used in the taking care of such sufferer, for which disinfection was ordered; whoever knowingly uses or permits others to use any vehicles or other commodities used in the transportation of the sick or dead, before they have been disinfected, shall be imprisoned for two years.

If there are any ameliorating circumstances, a fine of 500 marks may be adjudicated.

If a third party is affected with the disease in consequence of such action as above indicated, he shall be punished by imprisonment from three months to three years.

SEC. 44. The following parties may be fined from 10 to 50 marks, or incarcerated for not less than one week: (a) Who neglect to give the information required by sections from 2 to 4, or who delay for more than twenty-four hours to report such matter after they have been informed of it; this criminal proceeding is nullified

if the information is given in time by someone, although he may not be the one obliged to give it; (b) who refuses admittance to the Government physician to the patient or the body, for making the necessary examinations, as required in section 7; (c) who refuses information or makes false statements to the Government physician, as to section 7, second section; (d) who acts contrary to section 13.

SEC. 45. The following are subject to a fine not exceeding 150 marks or to incarceration, if under the existing laws no severer punishment is provided for: (a) Who contravenes against the preliminary rules issued by the Government physician or the local authorities in section 10; (b) who contravenes against the police regulations issued in sections 12, 14, 15, 17, 19 to 22, and 27; (c) who contravenes against the provisions of section 25 and section 26.

In commenting upon the foregoing law the official organ of the Government says: "The agency and the action of the authorities in preventing and combating dangerous diseases is justified not only from a sanitary standpoint, but also for important economical reasons. By placing the responsibility for an effective resistance on the shoulders of the Imperial administration, the Imperial diet did so with a full understanding of the great losses which might be inflicted on the whole population. The losses in the German Empire incurred year after year through sickness and disease may be approximately calculated. The number of people insured in sick-relief associations in the year 1890 was 6,342,828, nearly 14 per cent of the population. Relief was paid in that year for 39,176,689 days, as follows:

|                                   | Marks.       |
|-----------------------------------|--------------|
| Medical attendance.....           | 16, 783, 453 |
| Medicine.....                     | 14, 187, 242 |
| Relief money.....                 | 39, 883, 695 |
| Care at hospitals.....            | 8, 881, 509  |
| Pay to others for assistance..... | 347, 889     |
| Total.....                        | 80, 093, 797 |

"Considering that the loss in wages is not accounted for, which is hardly less than the amount paid in relief; that the figures represent only part of the total population; that they refer mostly to parties of an age not usually subject to sickness and that no contagious diseases had occurred during that year, the total amount lost by sickness can only be guessed at.

"Looking at these formidable losses, it is easily understood that a large part thereof might be avoided by the improvement in sanitary arrangements; and there is no doubt that they may be considerably decreased by a greater attention to hygienic laws, and that the spreading of the disease may be diminished and the losses by it greatly reduced.

"In the present advanced state of medical science, cholera, smallpox, and typhus are counted among the avoidable diseases; and scarlatina, diphtheria, and puerperal fever may be restricted by the enforcement of proper hygienic arrangements.

"The constant decrease in the mortality from typhus in the larger German cities has been accomplished by a strict observance of sanitary measures, and the almost entire extinction of smallpox, formerly so prevalent, is due to the protective measures instituted by law.

"Of the average loss during the years from 1885 to 1891 of a population of about 10,500,000 of the larger cities of the Empire, 11,290 died of diphtheria and croup, 2,552 of scarlatina, and 2,342 of abdominal typhus (typhoid fever). In the smaller cities and among the country population the loss was comparatively larger.

"The cholera epidemic in 1892 demonstrated forcibly the necessity of a uniform law for the prevention and extirpation of contagious diseases throughout the Empire. All the Imperial Diet could do at that time was to request the opinion of experts and to recommend to the several States the adoption of such measures

as proposed by them. It was thus that arrangements for a successful fight against the disease could be made at those places where cholera appeared. But all this was insufficient for the passenger and freight traffic. It was very fortunate that the disease did not spread more in Germany than it did. The lack of arrangements and the absence of suitable laws would have caused incalculable losses.

"This made clear the necessity of drafting laws for the prevention and extirpation of contagious diseases, and the preparation of them was at once entered into. The imperial board of health, in conjunction with the best known experts of the German Empire, belonging to said board as extraordinary (expert) members, discussed the scientific, technical questions to be adopted; and the foregoing laws are the result of their deliberations.

"It is not intended that this law should detail all the measures necessary for the protection against all contagious diseases. On the contrary, it only gives the leading principles, while the details and frequently the construction of the law must be left to the local authorities and the attending physician.

"Science is progressing. The laws, therefore, must be somewhat flexible and made so that the local authorities and the medical supervisors are justified and authorized to use their own judgment and give the law their own interpretation to a certain extent."

February 13, left for Vienna. On the 14th called on Consul-General Julius Goldsmith, who informed us that no rags had been sent from Austria to the United States since cholera made its first appearance. When cholera became prevalent in Russia, and before it entered the Austrian dominions, the consul-general wrote to all the U. S. consuls in his district and suggested to them the propriety of requesting the several rag exporters to stop sending rags to the United States. He said that he took this step as a precautionary measure before instructions were received from the Treasury Department to stop the importation. In conformity with these suggestions the exporters stopped shipping from Austrian ports, and no rags have been sent through them to the United States since that time. He said that rags were sent to England, but he had no knowledge of the quantity or when they were sent. When any other goods liable to carry contagion are sent from Austria, Consul-General Goldsmith requires the shipper to first procure a certificate from the sanitary bureau, which is a Government institution, that no cholera or other contagious or infectious diseases exist in the district from which the goods came. When this is furnished the invoice is authenticated. A great many skins used in making gloves are sent from here to the United States, and the consul requires that each consignment must be certified as stated. Consul Goldsmith informed us that the Austrian officials were very particular about all sanitary regulations, dreading a recurrence of cholera with the advent of warm weather, and that the Government had issued a request to the several European nations asking them to send delegates to Dresden in March, 1893, to formulate international methods for the prevention of the spread of cholera.

During the recent epidemic the Austrian Government caused all articles of baggage belonging to any person crossing the frontier to be disinfected by steam. This process was done so effectually that large quantities of valuable material—silks, satins, etc.—were ruined by the improper use of the steam, and constant complaints were made to all of the consular offices in the city by travelers coming from the countries which they represented because of losses which the travelers sustained by the indiscriminate steaming.

#### CHOLERA IN AUSTRIA-HUNGARY.

The following interesting statement was prepared by the governmental sanitary authorities, and summarizes the facts concerning the introduction and spread of cholera within the Austrian dominion, and the very efficient methods taken to suppress it:







*The cholera in the kingdoms and countries represented in the "Reichsrath" (Imperial Diet) in 1892, with a map annexed showing the spreading of cholera in Austria-Hungary.*

When, in June, 1891, the news came of the appearance of cholera in Cashmere, Afghanistan, and Persia, on its way from Hurdwar, in India, and that it had reached the large industrial city of Baku, situated on the banks of the Caspian Sea, causing great losses among the population, the attention of the imperial board of health of the department of the interior, which was thoroughly informed of the route of the cholera by the department of state, was called to the danger of the plague pushing its way into European Russia and threatening their own borders.

Carefully watching the further spreading of the plague, also its astonishing leaps, the universal attention of the several governments was at once aroused, and an organized resistance was commenced against the possible invasion of the plague by means of universal activity in the completion of much-needed draining and the introduction of sanitary measures for the supervision of the traffic with the infected countries, so that this organization could be put into operation at any time upon telegraphic instructions.

These precautionary measures at once showed good results. The cholera was very soon introduced by fugitives into the southern part of Russia by way of Batoum. It also spread in the direction of Astrakhan, and from thence along the River Volga to the north and west, while at the same time in and around Paris a suspicious epidemic of "cholérine" began. Cholera very suddenly appeared at Hamburg, and caused an epidemic surpassing in its intensity all former epidemics in that city. When fugitives from cholera fled from Hamburg they scattered in all directions and spread the disease in the German Empire. Then, in accordance with former experiences, it was to be expected that the plague would sooner or later invade the kingdoms and countries represented in the Imperial Diet. As a fact, it firmly established itself in the beginning of September at Podgórze and Krakau, near the Russian frontier, but it was kept there isolated in a small area.

The danger was greatly increased when, in the beginning of October, official information was received from Budapest confirming the presence of undoubted cases of cholera, and soon after the existence of the plague was reported from communities outside of Budapest and along the River Donau and its tributaries, so that it might easily be introduced by means of the existing traffic on the River Donau as well as on land.

The active commerce with the German Empire led to further apprehension. Cases occurred in rapid succession in several districts, from whose infected ports many laborers and emigrants returned to their native homes in Austria and Hungary.

Threatened on three sides by this cholera invasion, the Austrian board of health was sorely tried as to whether or not the unfinished organization of the local sanitary service and that of the Government had been so consolidated as to be able to discover the first cases of the plague and to confine and extirpate them.

This statement is intended to give information of the spreading of the plague in the kingdoms and the countries represented in the Imperial Diet, and also to give a résumé of the measures adopted to stop the invasion, and to restrict the further spreading from the infected places.

#### ROUTE AND EXTENSION OF THE CHOLERA.

##### *The Cholera in Galicia.*

The first case occurred in the city of Podgórze, Galicia. Other cases were soon added to this in the district and city of Krakau. At the same time single cases occurred in other districts of Galicia, in Bohemia, Lower Austria, and Styria.



The epidemic appeared to be extinct in the month of November, when the news came of cases of cholera in the district of Husiatyn, on the Russian frontier of Galicia. The disease spread to several communities in this district and entered the adjoining district of Borszczow, and was not extirpated at the end of the year.

Cholera, therefore, existed during the year of 1892 in two districts, one in West Galicia, confined to Krakau and environs, and the other in the extreme eastern part of Galicia, along the Russian frontier. Only individual cases occurred in the other localities, but the disease did not appear as an epidemic.

One case of cholera (a woman 30 years of age) occurred in Podgórze on September 8; others on September 9, 11, 12, and 13. The first case in Krakau, situated on the other side of the river, appeared September 11.

The first cases were not recognized as cholera. The examination of the sufferers and the autopsies did not establish the true character of the disease, and only the bacteriological investigations by Dr. Krokiewicz, in the laboratory of the board of health in Lemberg, of the material sent by the physician of the district of Wieliczka, established the presence of Koch's comma bacillus.

In consequence of the contradictory results of the investigations in Krakau and Lemberg, and for the purpose of securing a correct diagnosis, the Department of the Interior sent a prominent expert, Dr. A. Weichselbaum, professor of bacteriology at the University of Vienna, to Krakau, the expert professors at the University of Krakau being absent on leave. Dr. Weichselbaum confirmed the findings of Dr. Krokiewicz, and was able to establish the existence of cholera by the excrements of patients and in autopsies.

The epidemic was confined to Podgórze and Krakau for three weeks.

Independent of these there appeared, on September 12, the first case of cholera in the county of Wolowicz, district of Gorlice, three more cases soon following. The first cases in the country around Krakau-Podgórze appeared in the beginning of October, then in rapid succession and in greater number in the districts of Krakau and Wieliczka.

The first cases of cholera in the city of Husiatyn, on the Russian frontier and on the river Zbrucz, appeared November 14. It spread to the adjoining communities in the same district, and later on to those of the district of Borszczow, on the southern border of the first named.

The accompanying map shows the situation of the afflicted communities in the country around Krakau and on the river Zbrucz, and on the map is added the number of cases in the several communities of the eastern and western range of the epidemic in such a way that the upper figures indicate the number of cases of sickness and the lower figures the number of deaths.

The total number of cases in Galicia for the year 1892 reported to the authorities is 207, of which 119 were fatal.

It is not known how the disease was introduced into Podgórze, and it could not be ascertained after careful investigations. The first case was unexpected, but it appears that slight attacks had already occurred in the Lazarus Hospital before the first case occurred in Podgórze.

How the cholera was introduced into the communities around Krakau could not be explained, but the close proximity to and the constant traffic with Krakau leaves no doubt that it came from there. The majority of the infected communities are situated very near the cities and on the river Weichsel.

It is very likely that the before-mentioned woman introduced the disease. She had returned from America, arrived in Hamburg on September 3, and had there been under medical observation for five days, had left Hamburg on the 8th, arrived at her home on the 11th, and was taken sick on the 12th with symptoms of cholera.

It is remarkable that the parties first afflicted were mostly employed in handling produce—grocers, restaurant keepers, and cooks. Later cases occurred among

servants, day laborers, and mechanics. In one community a great number of cases occurred among butchers.

It is supposed, but not established, that the cholera germ had been introduced from the adjoining infected Russian districts, and that the traffic with these Russian districts, made easy by the freezing of the river Zbrucz, caused the introduction.

*Cholera outside of Galicia.*

The outbreak of cholera in Budapest, and quick spreading outside the capital, placed the western half of the Empire in great danger. Quite a number of cases of dysentery accompanied by vomiting had occurred during the summer in Budapest, but the bacteriological investigation established the existence of Asiatic cholera only in the beginning of October. Two weeks after the outbreak of cholera in Budapest had been established, a case occurred in Bohemia, introduced by a laborer who had come from Budapest; but a further spreading of the disease was prevented by the strict measures immediately taken.

It was at the same time introduced in Styria by a party returning from a trading expedition in Hungary, but he recovered; his daughter was taken sick October 15 under similar symptoms and died October 18. A few days later two of his neighbors died. In one of the latter cases the disease was pronounced Asiatic cholera, but it did not spread.

The first case of cholera in Vienna occurred October 21, 1893, and the autopsy and bacteriological observations established Koch's comma bacillus. Another case occurred October 23 and ended fatally. The third case was that of a laborer employed in unloading a vessel reported to be from an infected district, but which was engaged in carrying rags. The infection may not have come from the rags, but through the probably infected vessel. It occurred October 23; the cholera bacillus was established in the excrements. The fourth (last) case in Vienna was a sailor whose body was found in the hold of the vessel on the night of the 8th of November; in this case also Asiatic cholera was bacteriologically established.

No actual cholera cases besides these are known outside of Galicia, but a number of cases suspected to be cholera occurred in several districts, all of which, after careful bacteriological investigations made by experts, were pronounced not to be cholera.

The suspicion was frequently based upon symptoms only slightly resembling those of cholera; which shows how careful and conscientiously all cases were reported. The total number of cholera cases in the western half of the Empire in the year 1892 amounted to 214, with 125 deaths, as follows:

|                    | Cases. | Deaths. |
|--------------------|--------|---------|
| Galicia.....       | 207    | 119     |
| Lower Austria..... | 4      | 3       |
| Styria.....        | 2      | 2       |
| Bohemia.....       | 1      | 1       |

MEASURES AGAINST CHOLERA.

The measures against the introduction of cholera are contained in the "Cholera instruction," issued by the Department of the Interior under date of August 5, 1886. The principles and rules contained therein served as a guide for the sanitary commission. The progress in medical science and bacteriology, which was never lost sight of in combating and extirpating the disease, made it necessary that some amendments should be made to these instructions; and they called attention to the carriers of this infectious germ—that is, to patients and their wearing apparel, to commerce and traffic—as the means of spreading the disease. The new measures adopted may be divided as follows:

*1. Measures against the introduction of cholera on the frontier.*

The dangerous outbreak of cholera in Russia, where typhoid fever and other epidemics had existed for some time, naturally called the attention of the authorities to the danger of its introduction from there.

At the session of the sanitary council of July 2, 1891, measures were considered to check further progress of cholera from Baku and Tiflis (Russia), and regulations for that purpose were adopted.

By rescript of the department of the interior of July 8, 1891, the authorities were notified of the existing great danger, and the districts of Lemberg and Czernowitz instructed to take all protective measures for a sanitary inspection of all travelers coming from Russia, and their baggage; also all baggage checked through to some part of the interior.

The cases occurring near Paris caused investigations to be made for the observation of the same measures on the western frontier.

But when subsequently cholera broke out in Hamburg, and when the epidemic was officially reported in the Netherlands, in Belgium, and France, then a general observance of the sanitary and protective measures were ordered. This was necessary, because numerous fugitives from infected parts of the German Empire went to Switzerland, and to the watering places in Bohemia, threatening the introduction of the disease from all sides.

The measures taken to prevent the introduction of the disease consisted in the examination and, if necessary, the control of the new arrivals; the inspection of their clothes, linen, and other articles believed to be transmitters of the contagium; the supervision of travelers during their stay in the interior, for a time equal to the incubation period of the cholera. The import and transport of merchandise, as a possible carrier of contagium, was prohibited.

The sanitary examination of the traveling public was as follows: Upon the arrival of the train from a foreign country, the physician appointed for the purpose first called for the report of the conductor as to whether any cases of sickness had occurred on the road, then to examine the travelers and inspect the general state of health of all, to decide whether the suspects should continue on their journey or not. The local authorities had to provide accommodations necessary for the retention of such suspects.

The sanitary inspection of baggage was made at the same time and consisted of examining the soiled linen and luggage. If such was found, it was disinfected or destroyed, with the consent of the owner. Disinfected articles of linen were washed and subsequently returned to the owner. All the proceedings were reported to the authorities.

In observing these measures an interruption in the direct train connection naturally took place, and the through transport of all trains from a cholera-infected district was suspended.

The appointment of medical examiners was provided for in 1885 and 1886, when cholera existed in Italy and France, and the employment of physicians was so amended that as far as possible only physicians of pathological training were appointed.

The inspection of all luggage checked through to an inland custom-house was made in the same way, and the local authorities furnished the names of the physicians appointed for that duty to the custom-house inspector.

The freight traffic from the cholera-infected countries into Austria-Hungary was to a certain extent also restricted, inasmuch as goods and articles were excluded from importation, when suspected as carriers of the infection germ.

The importation of the following material was prohibited: Rags, old clothes, old rope, worn linen and bed linen, fruit, vegetables, caviar, fish, hides, and other animal products; first from Russia, then Hamburg and Altona; later on from the German Empire, France, Belgium, and Roumania.



The fear of the general public extended also to letters, and it was necessary to issue special admonition to prevent these articles from being included in the above measures.

Inasmuch as all this tended to restrict the commerce with the frontier districts and to cause great losses and suffering, the regulations as to these districts were to some extent modified.

This inspection of luggage very soon caused the traveling public to leave all soiled articles behind and they only carried clean articles.

Disinfection was carried on in a specially constructed apparatus with steam, or with a carbolic acid solution, in accordance with the instructions for disinfection issued August 16, 1887. Nearly all the inspection stations on the frontier were supplied with steam disinfecting apparatus.

The sanitary inspection stations stretched along the whole frontier and some idea of the work done may be gathered when it is stated that more than 218,000 passengers by land and water were examined, and over 150,000 pieces of baggage.

The number of suspected cases was proportionately small. The undoubted fact that the disease generally occurred in the river districts led to the strictest and most careful inspection of the waterways, and special regulations in regard thereto were issued.

The measures in regard to ocean traffic published by the Marine Sanitary Service consisted of an observation period of several days' duration, or, if deemed sufficient, only a medical inspection of people and articles from infected ports or countries.

## *2. Measures adopted for the interior.*

A sanitary examination of parties coming from other countries afforded only a limited safety; it was therefore ordered that they should be kept under medical supervision for five days. Parties coming from infected districts had to travel in separate cars and were under constant surveillance of the road officers, and when taken sick on the road they were sent to the barracks, a number of which had been established all along the line. No cholera patient could remain in the depot; he was sent at once to the nearest barrack. Even the railroad tracks were gone over and inspected, and all excrement from trains, wherever found, covered with disinfectants.

The trains from Budapest to Vienna carried physicians to minister at once to those taken sick on the road.

When cholera broke out in Hungary it was treated like a foreign country. Its frontiers were carefully guarded and commerce and traffic were subject to the strictest inspection.

Besides all these measures, intended to prevent the introduction of the disease and to discover the first case as soon as it occurred, the authorities extended sewerage and drainage and caused the removal of unsanitary evils in all districts where the conditions were in a state favorable to the development of the disease. All this was for the purpose of killing the epidemic in its first stage, if possible, and to prevent its spreading.

Very important, far-reaching, and efficient was the appointment by the Government of the most experienced physicians in the districts as inspectors and supervisors; sometimes, even, they were sent beyond the border into the adjoining infected countries for the purpose of collecting authentic information as to the stage of the disease and the measures adopted for its extirpation. In their own districts they ordered or superintended all measures for the prevention and extirpation of the cholera. In this way they came frequently in contact with the police, communal, and city authorities. They caused many improvements to be made. Through their efforts a more uniform action in the several districts was taken, sometimes even a friendly rivalry in creating sanitary improvements, all of which would not have happened in the usual course of things.

In consequence of all these arrangements and upon the instigation of the sanitary authorities an active movement took place in all the districts for the removal of all unsanitary nuisances, and the state, city, and communal authorities appropriated money liberally for that purpose. In the first place, public cleanliness, the removal of offal, rotten and decayed matter, cleaning of sewers or waterways, of springs and wells, the furnishing of pure drinking water, the building of drains, the removal of all nuisances in public places, hotels, and barracks was insisted upon. Orders were given and regulations issued for the building of sewers in the cities, and the amount of work done by the local authorities is remarkable; all of which will undoubtedly have a beneficial effect in preventing outbreaks for years to come.

Special attention was paid to the quality of and the traffic in eatables and drinkables. Any shortcoming was at once reported and corrected.

The several disinfectants were examined and the public was informed of the results, and the best and cheapest recommended. The number of steam disinfection apparatus with all improvements was increased. The local authorities in lower Austria alone had 196.

Money was liberally appropriated to assist the poorer communities in purchasing the needed disinfectants. A pamphlet was printed and widely distributed explaining the use of disinfectants; another one explaining the nature, the cause, and the appearance of the cholera, and the means of prevention, and giving local and individual protective measures, etc. This served two purposes: One to lessen the fear, and the other to spread a correct understanding of the cholera plague.

The arrangements made for notifying the authorities of the appearance of cholera in the interior of the country consisted in immediate information of the first case and its isolation. Notification by telegraph was free of charge. Recognized experts in bacteriology were everywhere appointed to examine all dubious cases; and where no expert could be had instructions and explanations were sent to the appointed physicians as to how they were to prepare and send cover-glass preparations and cultures for microscopic examination. These bacteriological investigations for the determination of the character of the disease have been of great help in many cases.

The isolation of affected parties, especially in the beginning, is frequently very difficult in communities having no hospitals. It was necessary, therefore, in such localities to find homes suited to the purposes and at the same time provide for the proper nursing. In such localities temporary hospitals were provided.

A call was made for volunteer physicians, and a list of these was prepared by the department of the interior.

The medical scientists of the Vienna University were requested to prepare a pamphlet explaining the diagnoses and the therapeutics of cholera in a concise, clear, and easily comprehensible manner, which was done by Drs. Kahler and Nothnagel, which was printed and sent to all physicians and druggists in the Empire of Austria.

Honorable mention is made of the valuable services rendered by the "Voluntary Association" and the "Austrian Red Cross Association."

All the administrative departments united in disseminating useful knowledge of the disease, in preventing its introduction, in removing its causes, and in the endeavor to extirpate it.

### *3. Measures at the outbreak of cholera.*

The same principles which govern the protective measures against the introduction of the disease from a foreign country were made applicable to an outbreak in the interior.

The patients were immediately isolated, or placed in cholera hospitals. Upon

the occurrence of the first case all people in the community, if deemed necessary, also those of the adjoining communities, were carefully examined, and all affected and suspected cases at once isolated. A physician was appointed by the Government and stationed during the time of the epidemic at places where no resident physician was located. The houses in which the cases occurred were thoroughly examined, the filth, offal, and dirt removed, the bedding disinfected, the sewerage inspected, suspected wells closed, etc.

The traffic and commerce with infected places was restricted to the utmost; the gathering of large crowds forbidden, the sale of fresh meats, butter, milk, cheese, vegetables, and fruit on the streets, and the collection of rags strictly prohibited.

Parties from infected districts desirous to go to other places were subject to medical examination. When the plague had spread to some extent the railroad traffic was restricted; all people carefully examined, the suspected or sick rejected, the baggage examined, and if necessary, disinfected; the traveling public from infected districts forwarded in separate cars; those from Krakau and Podgórze were subject to a five days' quarantine.

Special attention was paid to drinking water, and it was strongly recommended to boil it before using. In some districts tea was sold to the population at almost nominal prices.

Strict orders were issued and carried out for the disinfection of vessels.

The description contained in the first part of this pamphlet of the course and the spreading of the disease in the Austrian Empire, the attempt in Krakau and its environs to keep it confined, and the quick extirpation of the infection germ in many localities are the best proofs of the value of protective measures. All authorities combine and unite in the opinion that the dejections of cholera patients are the main cause of the infection, and that a proper and perfect drainage and sewerage and complete disinfection are absolutely necessary for the extirpation of the germ. This can be done only by uniform action throughout the country.

The devotion of all those connected with the supervision and inspection, especially the corps of physicians, can not be too highly praised.

The accompanying map indicates the course of the cholera along the rivers in Austria-Hungary, especially the Donau (Danube) and the Theiss.

The red dots represent cholera-infected places; the red crosses, the stations in the boundary line where people and commodities were examined.

One small map represents the boundary line along the river Zbrucz, which divides Galicia from Russian territory. The other, Krakau and environs.

The upper figures represent the number of cases of cholera at each place; the lower figures, the number of deaths.

In order to make the connection with the steamship which was to sail from Genoa for the Mediterranean ports that we had been directed to visit, we left Vienna on February 16 and went directly to Genoa, arriving there after midnight of the 17th, and sailed from Genoa on the steamship *Fürst Bismarck* on the 18th.

February 24 we reached Alexandria, Egypt, and called on U. S. Consul S. C. Ewing, who informed us that rags were being shipped quite extensively to the United States from there, and that they had not been disinfected since the last epidemic of cholera until a few weeks ago, when directions came from the consul-general at Cairo that all rags must be disinfected, and that they were now making an effort to carry out the requirements of Treasury Circular No. 143. The consul said that he had not visited the establishments, nor had he personally inspected the methods of disinfection and knew nothing about the details; that Mr. Chassaud, who has been connected with the consulate at Cairo for some years, had been especially detailed to inspect the methods of disinfection in Alexandria and attended to the business. We visited Mr. Chassaud, who at once placed himself at our disposal. Mr. Chassaud is of English parentage, but was born in Egypt;



has traveled extensively in the country, and is thoroughly acquainted with the people. In conversation with us he stated that he thought it strange that the United States did not require the disinfection of rags coming from Egypt at all times, because smallpox is never absent from that country. The Arabs will not be vaccinated and are therefore especially liable to the disease. Their religion teaches them a species of fatalism and they rarely employ a physician. When a member of an Arab family dies of smallpox they sell such articles as they do not wish to retain (without washing or cleansing of any kind) to the itinerant rag gatherer who is constantly prowling about the country. These rags are exceptionally filthy because of the method of life among the Arabs, and they have been exported until within a few days past without disinfection. He said, furthermore, that the general statistics published by the Egyptian Government concerning smallpox and other diseases are unreliable. Physicians employed by the Government live in each of the larger villages, but being themselves Arabs they follow the customs peculiar to their own people. As a rule, they pay no particular attention to sanitary matters, and more likely than not pay no attention to such calls as the Arab inhabitants make, for should they suggest a certain method of treatment which did not conform to what the friends thought the patient ought to have they would pay no attention to it. Mr. Chassaud said that the Arabs are always extremely filthy in their personal habits; that they live in houses made of mud and dung, which they very rarely cleanse, and they become in a short time horribly dirty—a statement we had abundant opportunity to verify during our subsequent visits to the several places.

Accompanied by Mr. Chassaud we visited the rag warehouse of Butterworth & Smalley. Their disinfecting chamber was built about three months ago and has a capacity of 5,500 cubic feet. In it there are four tiers of racks upon which rags are spread 8 inches deep. They disinfect from 24 to 25 bales a day. They employ 50 sorters, and their superintendent informed us that he never knew any of them to be affected with any contagious disease.

The rags all come from Alexandria and places in the interior. The inspection is under the entire control of Mr. Chassaud, who checks irregularities by keeping the number of the bales disinfecting under his supervision and comparing them with the invoices issued.

He informed us that the superintendent of the warehouses endeavored in every way to defeat him in his work of inspection, but that his constant presence during the process enabled him to assure himself that the work was properly done. We also visited Behrends' establishment. Here the disinfecting room is a wooden shed of temporary character and poorly constructed. It has a capacity of 400 square feet, and is divided into six compartments, each having a door through which a rail track is laid. The rags are spread on racks mounted on wheels, so that the rack may be pulled out of its compartment loaded with rags and rolled back to its position. They disinfect about 900 bales per week, employing 60 to 70 sorters. The rags are all shipped to the United States. We found the racks too close together, and suggested that they be separated; also that the compartment doors should have a padlock on each and the keys retained by the inspector during the disinfecting process. The proprietor commenced making these changes before we left the city. At this place the rag-dusting machine is used, which pulls apart the dried and matted rags and beats out quantities of dust with which the rags in this country are covered. The rags thus picked apart can be more thoroughly disinfecting because they lie more loosely upon the racks.

The next place visited was the warehouse of Mr. Menschausen, the largest establishment in Alexandria. In it are two disinfecting rooms, each having about 5,000 cubic feet capacity. The racks are arranged without order, being constructed for the convenience of those who carry the rags into the room. The lower rack is

close to the floor. On each the rags were piled from 3 to 4 feet deep. The same precautions are in use at this place as at the others in this city, all being under the inspection of Mr. Chassaud, who assured us that the changes we proposed in the methods of disinfection, so that it should conform with the requirements of Circular No. 143, should be made at once.

The fees for inspection are a charge upon the shippers, but do not go directly to the inspector, who is employed and paid by the U. S. consul.

February 25 we reached Cairo and called on Consul-General Little, who outlined to us the instructions he had given to his inspector in Alexandria, which in substance have been stated above. He said that rags are not now disinfected in Cairo, being sent to Alexandria for that purpose. He said that the rag exporters objected to the new regulations and were particularly averse to having an inspector watch them who had not been appointed and paid by themselves; but he had informed them that a strict compliance with the provisions of Circular No. 143 must be made, and that no abatement would be contemplated. Consul Little informed us that he had made particular inquiries of people who had lived for years in the country, relative to the sanitary conditions of the smaller towns, and there was but one opinion; that they were extremely filthy, and that smallpox was almost always present. We visited several Egyptian villages and the investigations we made confirm, in every particular, the statements made to us. The filth and squalor of these people is indescribable. The principal disease is smallpox; then come paludal fevers. Bowel complications are not common. Nearly all the native population are marked with smallpox. Inflammation of the eyes is frequent, and highly contagious. The proportion of the blind is unusually large, and corneal opacity very common. The huts of the Fellahen are wretched in the extreme, and horribly dirty. They are built of sun-dried brick, are small, with no window, light and air being admitted at the open door, through which the family and the domestic animals enter, all being protected by the same roof, and in the same room. In the villages there are no sewers, cesspools, or other sanitary arrangements, the street in the immediate front of the house being made the depository for human dejecta, and no care is taken to prevent contaminating the water supplies which are frequently nothing more than pools or ponds, fed by the Nile at high water, and when the river recedes they become stagnant, receiving no further water supply until the next inundation. Not only are the streets in front of the village huts excessively filthy, but the same conditions exist in the narrow streets of "old" Cairo and in Alexandria.

In old Cairo the offal from the houses, workshops, and other places is swept into the streets, where it is trodden under foot and left to decay, until the condition of the streets becomes so bad that men are sent through with shovels to dig up the decaying mass, put it into baskets strapped upon donkeys, and carry it to the outskirts of the city, where it is dumped. There are no regular sanitary precautions in the older portions of Cairo or Alexandria. In the midst of the filthiest places the people draw water from shallow wells, around which there is no protection to prevent the inflow of surface drainage or the contents of adjacent cesspools, which are rarely if ever emptied. The waterworks which supply the city are imperfect. Close to the "intake" the natives bathe and wash their garments; human dejecta and the excrement of animals lie about contaminating the water; the whole length of the lower Nile is fouled by drainage and the carcasses of animals, and the inhabitants everywhere use the stream for washing clothes and bathing purposes. That the water is not properly filtered before being pumped through the city is shown by the large quantities of organic matter to be found in the water drawn from the pipes. Indeed, it would be difficult to conceive a place better calculated to foster disease than in the older parts of these cities, and undoubtedly the disregard of sanitary measures accounts for the frightful loss of life which depopulates Egypt whenever there is an epidemic of cholera or smallpox.



March 3 we returned to Alexandria to take the steamer which sailed that day. We saw Mr. Chassaud, the inspector, who informed us that the suggestions relative to changes in the disinfecting rooms had all been made, and that since our visit and conversation with the proprietors matters were progressing more satisfactorily. Before going on board the ship we met a gentleman whose name we withhold at his request. He is a member of a firm of rag exporters who have extensive establishments, and who are in close business relations with importers in the United States. He stated that rags are now going from all points into the United States with no pretense of disinfection; that when we began our investigations in Ghent our presence there was made known by telegraph to all the principal rag dealers on the Continent, and that at a subsequent meeting of those dealers, which was held in Brussels, they related the steps they had taken to deceive us as to the matter of disinfection; that Mr. Lansenburg (whose place we have heretofore described) stated that when he told us that his employés had gone away for the night, and that we had better return in the morning, he had immediately set all his force at work and put up the racks over night, so as to be ready for our inspection in the morning; that Mr. Van der Haeghe, also of Ghent, stated that he did the same thing after meeting us on the street in front of his building, and requested us to call later in the day; that he then prepared the room as best he could, and lit the sulphur with the expectation that we would not be able to get in, but that we came back a little too soon. At the same meeting it was stated that the houses at Arseele and Roulers had been prepared by telegrams for our arrival, but that after we had left the country matters went on as before. He also said that at this same meeting it was stated that some days after we left Ghent another official from the United States came there to investigate; that the U. S. consul sent for Dr. Pagaldine (the local inspector of disinfection) and the other inspector asked him if he saw the sulphur ignited at each of his visits. He replied that he did, whereupon the new inspector declared himself satisfied, and said that "everything was all right at Ghent;" that the rag exporters were delighted that the U. S. Treasury regulations, which we had insisted should be carried out at the time of our visit there, were disregarded, our report made to the Government set aside, and the suggestions we made overruled. This gentleman further stated that one of the English exporters had been to him, and told him that it was not necessary for him to disinfect rags, and advised him not to do so. Said our informant: "Business is business; it costs money to disinfect rags, and when the other people are not disinfecting why should we? So," said he, "we simply baled our rags without disinfection, stenciled them 'disinfected' and they were shipped and admitted to the United States without question." He said: "There are certain rag dealers in Boston and New York who seem to have more influence in Washington than your reports, which are certainly not being regarded." He then showed us a letter from New York, the signature to which we withhold, in which it was stated that "in spite of the reports made to the Department by the inspectors now abroad, rags will be admitted without hindrance into the United States until March 15. Please rush your rags along." And he continued: "I have come to Alexandria for the purpose of hastening forward the rags we now have on hand at this place." He then asked us if we had any suggestions to make. We replied that we could not commend the course he had taken, and would recommend him to continue disinfecting the rags. In response he said: "Gentlemen, so long as your consuls receive the fees for certificates of disinfection things will never be any better than they are now."

These significant statements, humiliating as they are, were confirmed, first, by letters from U. S. Consul W. E. Gardner, then at Rotterdam, already quoted (see pp. 95, 96); second, by statements made to us by U. S. Consul Roosevelt at Brussels, who informed us of the visit of the official to Ghent and the subsequent total



disregard shown by the rag exporters there after his visit to the regulations requiring disinfection; and third, by the information furnished by the United States Bureau of Statistics, which show the enormous increase in the importation of rags into the United States beginning at that time. The importation for January, 1893, into New York, Boston, and Charlestown was 14,046,658 pounds; for February, 8,522,431; for March, 20,431,478, and for April, 25,067,000 pounds.

These figures indicate that the advice from the New York importer to "rush your rags along" was responded to promptly.

At the request of Consul-General Little we visited the steamship *Guildhall*, lying in the harbor of Alexandria, preparing to carry the Egyptian exhibit to the World's Fair, in order to determine whether the vessel was in proper sanitary condition to make the voyage. We visited and carefully inspected every part of the ship, which was arranged to carry 26 first-cabin and 225 second-class passengers, besides camels, donkeys, and the other things necessary for the exhibit. Many changes had been made to accommodate the freight which she carried, and the ship was littered by the carpentry going on; but it was in good sanitary condition, and all requirements relating to the carrying of emigrants had been complied with; a certificate to that effect was sent to Consul Little.

March 4 we called upon U. S. Consul Selah Merrill at Jerusalem, who informed us that there was no disinfection of rags either there or at Jaffa; that the rags and bones sent from Jerusalem and Jaffa and the country roundabout went to England, none going direct to the United States.

At the date of our visit the city of Jerusalem was filled with Russian pilgrims who had come direct from Russia without quarantine of any kind for the purpose of worshipping at the shrines in the city. The consul informed us that they generally come in groups of from 100 to 200 at a time; they are from the poorer classes, and either camp out in wretchedly poor tents or else find lodging in the poorer quarters of the city. There are no sanitary precautions taken with reference to this pilgrimage and the authorities have no knowledge of the parts of Russia from which they come or what they bring with them; they remain from ten days to two weeks, sometimes walking to and from the seaports.

There were in Jerusalem at this time more than 50 lepers. These people are not admitted within the city gates, but are permitted to squat beside a wall running parallel to the city wall and close up to the Jaffa gate, where they beg for alms; they are wretchedly poor and filthy. There is a hospital for them when the disease has progressed so far that they are no longer able to beg.

Ophthalmitis is common, and there is a large proportion of blind. The cast-off clothing from these people is sent with the other rags to England without disinfection. Purulent ophthalmia is highly contagious and readily transmitted. It is difficult to contemplate with any degree of satisfaction the fact that the cast-off clothing of people afflicted with ophthalmia, leprosy, and smallpox comes almost directly to our own shores without disinfection. The native inhabitants of both Jaffa and Jerusalem, like their neighbors in Egypt, are very filthy; in many places about the city the filth is too shocking to be described; it is almost impossible to walk through the streets without becoming contaminated. In some of the villages about Jerusalem the filth is even worse than it is in Jerusalem, yet the rags from all this country find ready purchasers. We were informed by the consul that the American and English residents in Jerusalem are much alarmed at the present state of affairs; that during the past winter both Jew and Gentile residents held meetings to consider what was best to be done in view of the unsanitary conditions in the city. As a result they united in a petition to the Sultan of Turkey, in which they guaranteed to keep the streets of the city of Jerusalem clean and supplied with an abundance of pure water without any expense to the Turkish Government if the Sultan would permit them to do so, but their request was denied.

There is excellent opportunity to carry out the scheme proposed, for the pools which are said to have been built by King Solomon to supply the city with water are to-day almost as perfect as when they were completed, and the conduits which were built to convey the water to Jerusalem are almost intact; the springs which then supplied the pools with water still empty into them, and the water overflows and runs to waste away from the city.

Before offering to put this scheme into operation the whole subject was carefully investigated by English engineers who came for the purpose of making the examination. After a most careful inspection of what was necessary to be done they reported that it was not only practicable but expressed astonishment that it had not been done long ago, and that it would require but a comparatively small sum of money to perfect the water supply. The amount of money was subscribed before the Sultan was petitioned, but up to the time of our visit the permit had been withheld, and nothing can be done until this permission is obtained.

The supply of water for the use of the city is obtained from a few wells and from so-called cisterns into which the rainfall is conducted, which being located in depressions, surface water finds entrance, and with it, of course, the surface drainage. Should an epidemic of cholera occur here the unsanitary condition of Jerusalem would make the city a focus from which disease would radiate in all directions because of the large number of pilgrims from other countries who come to worship at the several shrines. Some strict quarantine regulations should be enforced to prevent the introduction or spread of disease which is liable to occur in this place. Without quarantine Jerusalem is a menace to the health of Europe.

March 10 we reached Smyrna, and called on U. S. Consul W. C. Emmett, who informed us that no rags had been shipped from there to the United States for six years; that he had declined to certify invoices on account of the prevalence of smallpox in and around the city. Smyrna, he said, is never free from smallpox, and no sanitary precautions are taken to prevent the disease spreading and the natives do not seem to care much about it. One reason for the continued presence of the disease is the fact that the Greeks, who form a large proportion of the population, refuse absolutely to be vaccinated. At this time there were fewer cases than formerly, but five months previous it was known that there were about 20 deaths a week; the total number is never known, for there are no sanitary statistics or death records. Large quantities of extremely filthy rags are shipped from here and Beirut; from here they go to England; from Beirut many go direct to the United States without disinfection.

Invoices for wools and rugs which are brought to Smyrna by caravans from the interior of the country must be accompanied by a certificate from a person who is known as the "local health officer" attached to the invoice. The consul said that these certificates had no value because the goods came from places in the interior where, under existing circumstances, it would be impossible for this officer to know anything about the sanitary condition of the places; that he certified only to the signature of the "health officer," and then the goods were forwarded without disinfection. He said that this was an unwise thing because "sheep rot" and "contagious catarrh" are very prevalent here among the animals. There is little doubt that some of the goods coming by caravan were from places where cholera and other contagious diseases exist. It is the custom for caravans coming from different directions in the far interior to join before arrival here, and no one but the drivers attached to each caravan know where they come from. No effort is made by the authorities of Smyrna to find out the starting point of the caravans; therefore nothing is known about their origin. It is in this manner, doubtless, that cholera is transmitted from place to place in that country.

From Smyrna we went to Constantinople, where we arrived March 13, and called upon Consul-General Hess, who told us that he had invoiced no rags to the United States for some years, considering them too filthy and dangerous to go there without disinfection; they go from here to England. Much merchandise from the Caucasus and adjacent territory passes through this port, and is either reshipped or goes direct to the United States.

As to the sanitary condition of the cities in this or adjacent countries from which goods come, all that our consul can do is to certify the genuineness of the signatures of the Turkish officials. These officials rely upon the reports made by their own officers located in the several countries sending goods to this place as to the existence or nonexistence of cholera or other epidemic diseases. The Ottoman officials certify to the U. S. consul the correctness of the reports they receive, and the U. S. consul certifies the genuineness of the signatures of the Turkish officials here, and to the further fact that no epidemic exists in Constantinople. March 14 we met by appointment Dr. S. C. Zavitziano, one of the sanitary officials of the city, and also a sanitary correspondent in Turkey of the U. S. Marine-Hospital Bureau, with whom we spent much time, and who gave us some valuable information, being thoroughly conversant with the sanitary condition not only of Constantinople, but of the Ottoman Empire; we are also indebted to him for a series of official documents on these subjects. Speaking to him about the excessively filthy condition of the streets of this city, and of the apparent indifference there was to the garbage and offal which found lodgment in the gutters where it had been thrown or swept from the houses or other establishments, the doctor said that, notwithstanding the unsanitary condition of the streets, the health of the city was usually good, and it was only at times when some epidemic disease like cholera found an entrance that the unsanitary conditions seemed to tell against them.

He said, as a partial excuse for the condition of the streets, that it was almost impossible to get the Sultan's orders obeyed because of the general ignorance that existed among the subordinate officers who were charged with carrying out the orders issued. He said it is the rule in this country when an officer does not understand an order to do nothing, the penalty for inaction being less severe than for executing a wrongly interpreted order. There is in this country a commission known as the "superior council of health." This commission receive information relative to the existence of disease of any kind within the realm from the office of the minister of state, to whom all Turkish consular officers report. The minister transmits to the board of health such dispatches as he wishes to. The duties of the board are simply advisory; they have no power to direct. All orders come immediately from the Sultan. The doctor stated that the preparations for meeting an epidemic are very meager, for "we have no money." Then everything is deferred until the peril is upon us, when arrangements are made in haste, and are of course inadequate. There are great natural advantages for a quarantine station at the head of the Bosphorous (the Black Sea entrance), but accommodations there are altogether insufficient because of the lack of money needed to put up the necessary buildings and to make the quarantine establishment all that it should be for the protection of the city.

Epidemics of cholera have always been severe in the Turkish dominions, especially in Constantinople, because of unsanitary conditions. During the last epidemic 2,500 deaths from the disease occurred in Constantinople in one day. At best the drainage of the city is not good; the sewers are few, shallow, poorly constructed, and easily crushed, thus stopping the outflow and bringing a pool of sewage to the surface with the usual results. The doctor said there were occasionally epidemics of plague brought here by people who come from the country where it originates.



The disease is contagious, characterized by buboes and glandular swellings all over the body, and it usually has a fatal termination in a few hours. It originates in those countries where rice is grown, and where the natives are filthy in personal habits and method of living. They build mud huts on the river bottoms, piling up the spongy earth to make a floor, then walls of mud are raised for covering. When the rivers rise, as they do at least once a year, the earth underneath the hut becomes thoroughly water-soaked, and a short time thereafter the plague appears. Smallpox is always present, but it does not assume the serious form observed in England or France. Prejudice against vaccination, though still very strong, is less decided than formerly. As the head of a large foundling hospital, the doctor now vaccinates every child that is brought in. In years past this could not have been done because of the prejudice against it. Sanitation moves very slowly for two reasons: When a proposition is made to introduce some sanitary method not hitherto in force the first thing done is to consult the Koran; if nothing is found therein which can be construed by the interpreters against the proposed measure there is no objection to its being done; but any scientific truth which in any way conflicts with the interpretation of the Koran, or with its teachings, could not obtain a footing there for an instant.

When the interpreters are in doubt as to whether the proposed methods conflict with the teachings of the Koran they give the benefit of the doubt to the Koran, and that is an end of the matter. If the interpreters find nothing in the Koran which in their judgment prevents carrying out the proposed measure the next difficulty is to get the money with which to do the work, which is a most serious matter. Under these circumstances you can understand, said the doctor, "that all sanitary measures move very slowly, and in consequence I am extremely apprehensive." I can not close my eyes to the fact that we are in great danger, for we have no appropriate preparations to meet the epidemic which is approaching us on both sides, from Persia and Russia. The Sultan is very anxious to do all that he can to prevent the entrance of cholera into the country, but lack of means and inefficiency among the subordinates who are directed to carry out the instructions they receive prevent proper preparations, and to-day it is more by good luck than successful management that the disease has been kept out of this city. The central authorities issue the most positive orders to the local authorities in the provinces, but there they do not seem to realize the dangerous situation they are in, and little is done to suppress the spreading of the scourge; even the lazarettos which were ordered established along the Russian boundary line, by reason of their mismanagement, do not prevent the disease from getting through, and it has already passed the boundary and exists within the Empire. The officials are careless, to say the least, concerning the introduction of the disease, and the doctor cited an instance in which a body of troops came from Erzeroum, declaring to the quarantine officers, falsely, that they came from another place where the cholera did not exist, and, passing the sanitary cordon without undergoing quarantine, they introduced the cholera into the first place where they stopped. At Yemen it is now known that the frightful epidemic which took place there and which caused great loss of life was introduced by a party of slaves who were clandestinely landed in violation of the law in order to avoid quarantine regulations, the introduction of the disease being traced directly to them. It was in that province that the natives prevented the physicians sent by the Government from doing anything to stop the spread of the disease, and would not allow them to minister to the sick. Several thousand of the population died.

That the quarantine regulations which are so necessary to prevent the introduction of cholera into the Empire of Turkey are not efficiently administered the following series of documents obtained for us by Hon. D. P. Thompson, minister to

Turkey, from the sanitary officials of the Imperial Ottoman Government will explain. They were forwarded to us in London, accompanied by the following letters:

No. 27.]

LEGATION OF THE UNITED STATES OF AMERICA,  
*Constantinople, April 3, 1893.*

Dr. W. KEMPSTER, *London:*

SIR: I have the honor of inclosing to you all the correspondence of sanitary regulations in regard to cholera and other infectious diseases and the quarantine regulations adopted by the Ottoman Government; also such information as we have been able to collect in relation to the leprosy. This information is difficult to obtain here on account of the meager publications of this Government, most of which are published in the Turkish language. Dr. Zavitziano has diligently collected all that is obtainable, which I submit to you.

Respectfully, yours,

D. P. THOMPSON.

Inclosed was the following letter:

Dr. WALTER KEMPSTER and Dr. FAIRFAX IRWIN:

The United States Marine-Hospital Service is inquiring about sanitary regulations of the Turkish Empire; especially they wanted copies of orders that have been issued by the Imperial Ottoman Government relating to quarantine, the cholera, or other contagious and infectious diseases; also any documents relating to leprosy, and, besides, any documents relating to emigration or immigration.

There was a law about emigration and immigration, but nobody knows about it; it is not in force since a long time, perhaps since it has been issued.

About leprosy I may say that there are no regulations or orders issued; it may be that there are in the Koran, but nobody knows about them. I forward 20 documents, of which 11 are printed and 9 polygraphed. Of these 7 are regulations, or orders, which are executed by the different lazarettos, and the 13 others are instructions, or desiderata, which have never been realized or put into execution. Among the polygraphed documents there are 4 concerning improvements to be made at the lazarettos. There does not exist any document, regulation, order, or instruction concerning other contagious or infectious diseases except cholera, yellow fever, and plague.

SPIRIDION C. ZAVITZIANO,

*U. S. Sanitary Commissioner, Constantinople.*

APRIL 3, 1893.

The polygraphed documents referred to concerning improvements to be made at the several lazarettos we have translated entire; from the others we have made such selections relating to the same subject as we considered necessary to make their meaning clear without giving in extenso the lengthy but unnecessary explanations.

The quarantine station of Camaran, one of the most important in the Dominions, is situated on an island of that name, in the Red Sea, near the southwestern coast of Arabia, and not far from the city of Hodeida, at which place many pilgrims on the way from India to Mecca disembark and walk to the "holy cities." This station is intended to prevent the pilgrims from India taking cholera with them to Mecca or carrying the disease back from Mecca to ports on the Arabian Sea. Tens of thousands of pilgrims pass and repass this station annually. It is to this station, therefore, that particular attention has been paid, and several commissions have been sent there by the Ottoman Government. They have examined the place and reported what was necessary to be done to make this quarantine station efficient, but at the date of our visit the suggested improvements had not been made.

## REORGANIZATION OF THE OTTOMAN LAZARETTOS OF CAMARAN AND ABOU-SAAD-VASTA.

*(Translation of document No. 1.)*

Summary instructions of the superior council of health recommended to the attention of His Excellency Dr. Hadji-Arif-Bey, chief of the mission, and of his collaborators :

First. In principle a lazaretto should be isolated in an absolute manner from all habitations and from every group of habitations. Experience has demonstrated the danger and insecurity resulting from the villages situated upon the isle of Camaran, notably from that which is in proximity to the quarantine establishment at the south of the bay. From this is evident the urgent necessity of proceeding to the evacuation from the entire island of every dwelling occupied by other persons than those who are submitted to the régime of the quarantine. That is a condition *sine qua non*.

Second. To assure to the pilgrim vessels easy access to the bay of Camaran, at the entry and exit, as well as good anchorage, there must be fixed buoys, beacons, and all other means judged necessary by competent navigators. This measure has long been called for by navigators who have had to suffer from the need of it repeatedly and gravely, because of the lack of security at all these points.

Third. The question of debarking and embarking the pilgrims has been many times discussed by the chiefs of the service of the lazarettos as well as by the council of health ; the present system is full of inconveniences.

It is desirable that transportation (to and from the ships) should be made by means of large boats drawing little water, which shall be towed by one or more tugs. The commission will have to decide which will be the best system, and what would be the expense if the Hadji's pilgrims must meet the expenses necessitated by this mode of transport, and whether this should be executed under the care of the sanitary administration, or by special enterprise.

This is a question which concerns the pilgrim vessels and not the council of administration of the lazarettos.

The question of the wharves, which is so important, should be solved by the construction of a special lazaretto for the choleraic, and by the construction of a wharf for each division of the lazaretto.

Fourth. The entire island being in the first place free from every inhabitant, it will be permissible for the commission to choose the best site and most suitable land, reconciling as much as possible the two principal interests of navigation and the hygiene of the quarantined.

The first point to examine is the degree of proximity to or distance from the shore. This point will be determined by several conditions, of which the principal are: The elevation of the coast above high-water level; the stability of the coast line and its geological formation, etc. All conditions should serve to regulate the choice of the site and the question of drainage, and of providing the water supply, to be mentioned hereafter.

In principle the distance of the site of construction should be as far as possible from the shore; but the surface at this point is lower, and the earth easier of encroachment by the sea and the infiltration of the tide.

The first constructions were rather distant from the sea; they have been brought nearer in order to spare the quarantined the long walk. Another question which the commission must solve is the water supply and the disposition of the excrement, and their relations to the establishment.

As to the sites of the divisions of the lazarettos, they will be subjected, as much as possible, to the following exigencies :

1. To the facility of ventilation, which must be sufficient without being exaggerated, taking into account the prevailing direction of the winds.



2. To the nature of the soil and its exposure to the light and air.

3. Finally, to its geological composition, which should assure stability and be upon a compost as much as possible made up of durable beds of large gravel, possessing a certain altitude above the surrounding lands (a plateau of medium elevation), a little undulating, but easily levelled, and, above all, permitting easy drainage toward the sea of the water and the detritus carried to this marine reservoir, where all the dangerous material from the buildings should go. The commission will have to study the hygiene of all these elements, and others which will appear, after careful examination made upon the spot.

4. Here our indications will be necessarily brief, inasmuch as it is only upon the spot that the commission can decide upon the sort of buildings, the mode of construction which will be appropriate to the climate, to the kind of life, and the preferences of the quarantined as well as of the needs of hygiene in general.

As to the materials of construction, the base of the buildings should be of stone; for the remainder, wood. The buildings should protect their inhabitants from the heat of the tropical sun and from the rains and strong winds of the monsoon, which sweeps the shores of the isle of Camaran.

One of the principal precautions is that of securing perfect evenness and impermeability of the soil of the dwellings in order to avoid the infiltration into the soil of the débris, alimentary or other, of the pilgrims.

Upon the commission will depend the choice of the materials and the proper means to insure the complete hygiene of the soil and of the other parts of the dwellings, taking into consideration the particular conditions we have noted here.

In order to obtain sites for the constructions a large area must be chosen to secure the proper space. The distance should be at least 1 kilometer (3,280 feet) between the divisions or groups of buildings in order to assure isolation and salubrity.

A division is a complete organization comprising in its service a sufficient number of special buildings to provide quarantine, hospital, mosque, accessory services, latrines, cisterns for water, dwelling for the physician of the division, etc.

Each division will be composed of 20 dwellings at the most. Each room should be sufficiently spacious to afford at least from 15 to 20 cubic meters of capacity (550 to 700 cubic feet) for each pilgrim, well ventilated, conveniently arranged, and easy to keep clean.

The buildings should be separated by a distance of at least 100 (about 300 feet) meters.

The most convenient form of these buildings will be the pavilion, without upper floors. The special division, devoted to the traveler attacked by cholera, should be isolated at least 2 kilometers (about 6,500 feet) from all the others and from every habitation. It should be constructed of reeds or boards in a manner to be easily destroyed after having been used, or to be transported and reconstructed at need upon another site.

Sixth. Drinking water and disposal of dejections.

This service is the most important of all those at the establishment of Camaran.

The quantity of water should be largely abundant, but the quality of the best as nearly as possible ("mais leur qualite devrait etre de premier choix autant que possible"). In this connection it should be stated that the water of the island is of inferior quality, brackish and perhaps impure. After the exhaustion of the wells it would be preferable not to use them either for drinking or the preparation of food, but to use distilled water, as is done at Steamer Point, near Aden, and other places on the Red Sea. The commission is charged especially to study and solve this question. If obliged to have recourse to the water in the wells it is necessary to be sure of the purity of the water and of noninfiltration. It is known that it (the water) comes largely from the salt water of the bay, through the beds of sand which make the shore; that is to say, the water of the bay should

be guaranteed against receiving the filth and the dejections from the latrines of the quarantined, which would establish a vicious circle, serving to the quarantined the water soiled by their dejections and containing the scourings and morbid germs from themselves or from those who preceded them at the lazaretto; in brief, by reason of this very defective system it would be much better to make use of distilled water. In all cases a chemical and bacteriological examination of the waters of the wells and others of Camaran will be necessary.

As to the water-closets, they should be numerous for the needs of the pilgrims; they should be built sufficiently far from the dwellings, and solidly constructed, so as to prevent all infiltration of the matter into the neighboring soil. They should be inodorous, and constructed in a manner to permit perfect cleansing.

The system to adopt will be the movable cesspool to contain the dejections, composed of a receptacle of sheet-iron, strong and absolutely impermeable, easy to transport to a distance to be emptied, cleaned, and disinfected. This system appears preferable to carrying away the evacuations by means of pipes of cast-iron or other material, which must be conducted far into the sea and would be very expensive, and the mouth of which would be subjected to movements due to the changes of the tides.

Two conditions are indispensable to insure the success of the movable apparatus. The first is, to keep them in such a condition that the apparatus can not foul the soil of the floor of the dwellings or their surroundings through which the infiltrations could reach the wells; the second is, that the dejections should be thrown into the sea far enough away from the shore where the lazaretto will be constructed and where the wells and springs of water are found. This material should be thrown in a direction which will not possess the serious disadvantage of being carried back by the tide toward the coast, where it can flow by infiltration through the porous sand either toward the springs of water or toward the buildings of the lazaretto. The greatest precautions should be taken to prevent the return of the dangerous particles of the dejections toward the place of their origin, constituting a sort of auto-infection of the pilgrims by their own filth.

The council of health invites the special attention of the commission to all these details, and to many others which can not enter into a brief statement of the subject. The chief question which it will have to solve, a double question, although being but one, since the problem is composed of two principal items, is the water and the latrines; they are interdependent one upon the other; upon them the successful solution of the hygiene of the quarantine depends.

Seventh. Although the subject of disinfection is a matter to be treated by itself, it may not be out of place to remind the commission that in the project of reorganization and construction it must occupy itself with the question of a special place for the installation of the disinfecting apparatus.

The council is of opinion that there is no good cause to give up the disinfection chambers, but that the needs of the service demand a notable increase of its apparatus as well as for the establishment at Camaran as for that at Abou-Saad-Vasta.

Eighth. It remains also for the commission to occupy itself with the last-named establishment; to reorganize and complete it after the plans and estimates which have been proposed and decreed and which have received the approbation of the superior council of health. For the rest, and notably for the question of the water supply and for the service of the water-closets, the commission must guide itself by that which has been said above for the establishment of Camaran, taking into account the differences inherent to the localities and the space and resources of the country. It is for them to decide whether the supply of water at Abou-Saad-Vasta should come from the cisterns already existing or to be constructed or from the infinitely more advantageous source—the distilling apparatus.

Ninth. Finally, the council entertain the wish that the several members of the commission will have the kindness to rely at all times that they judge suitable

upon the willing concurrence of the consular representatives of the armed powers, a concurrence that they may be assured of finding sincere and devoted to the work of common interest in the good organization of the quarantine establishments of the Red Sea.

Tenth. Cemeteries: Place them at least 3 or 4 kilometers (about  $2\frac{1}{2}$  miles) distant from the divisions, and to the leeward of the establishments, upon land neither too dry nor too wet, not subject to infiltration, and fulfilling other hygienic conditions; the commission will have to choose a suitable site.

Dr. MAHE,

*Chairman.*

COZZONIS,

Dr. VITALLIS,

Dr. HAGEL,

Dr. VAFIADES,

TOSCANI,

Dr. STEKOULIS,

*Members.*

From the next document in order of time we translate the following extracts:

The superior council of health on February 24, 1891, issued a circular relating to the epidemic of cholera, which had then subsided, but which they anticipated would break out again in the spring; to prevent if possible the usual ravages of the disease they called attention to the following matters:

That houses in which there had been cases of cholera should be again disinfected; also, that the cesspools and drains should be put in proper condition and thoroughly inspected.

They directed that the effects, old clothes, bedding, etc., which had been used by cholera patients should be destroyed. The graves of those dead with cholera should be covered with lime, and the authorities should prevent the burial of anyone dead of cholera in a cemetery within the walls of a city, but cause them to be buried at a distance from the city and away from traveled roads. The removal of all species of filth, cleansing water-closets, drains, gutters, and roads; this should be the subject of vigorous watchfulness by the authorities. The subject of drinking water is of the first importance, and the authorities should see that the supplies are not contaminated by cesspools or by seepage from cemeteries, or water closets, or any other contamination, and that it should be of good quality and sufficient for the needs of the population.

"The localities bordering upon those attacked by cholera last year, and which have had but little or no cholera, should be considered the most suspicious and dangerous, and it is most important that the authorities should supervise these places." They enumerate a large number of villages and towns in Syria which need oversight. They also require the authorities to inspect the nomadic tribes in their vicinity; also, along the course of the Euphrates. They suggest the establishment of local health authorities to carry out their plans, providing even for the oversight of "butcher shops," to secure healthy alimentation for the population; also, for the oversight of prison and "unhealthy houses," as well as "highways, gutters, and drains."

The commission formulated rules concerning outbreaks of cholera, and recommended that on the first appearance of the disease the local authorities should assume the management and control of the case, isolating the patient, closing the house and forbidding entrance to it; "the sick to be taken far from the well and put under tents, the location of which should be changed at least once in three days and removed to a new site. Squads of disinfectors should be formed to go from place to place and disinfect under the direction of an inspector.



While leaving the selection of disinfectants to the "local physicians," they suggest the following different methods :

"For washing the face and hands of those who approach the sick, the sulphate of copper is to be exclusively employed in the proportion of cupric sulphate 12 grains, to water 1,000 grams.

"For the disinfection of closets and vomited matters, cupric sulphate 50 grains, to water 1,000 grams."

They recommend packets of sulphate of copper, 25 grains each, to be left with the family; one or two packets to be dissolved in water as occasion requires. "Soiled linen is to be immediately immersed for two hours in a strong solution of sulphate of copper; linen not soiled, in a weak solution of the same.

"Coats, etc., of the sick to be boiled in water for half an hour.

"Clothing, soiled by choleraic dejections to be plunged for one hour in a strong solution of sulphate of copper, chloride of lime, or corrosive sublimate; the same for carpets, floors, and furniture. The mattress, bedding, coverings, etc., must be destroyed, if not, they should be disinfected in an hermetically sealed inclosure by sulphurous acid gas." To insure efficiency in disinfection of clothing, bedding, etc., "it is desirable to make use of special apparatus such as perfected chambers for disinfection; in all cases, if it is possible to do so, it is preferable to destroy them.

"Disinfection of buildings will be by sulphurous acid gas."

They suggest that those dead of cholera "should be buried 2 meters in depth, and the grave covered with lime," and that the cemeteries should be at a distance from all habitations.

Under the head of "general measures" the superior council of health suggest provisions for quarantining against the infected localities contaminating others; and to this end recommend "the establishment of cordons and of posts of observation." When the infected locality "is easy to surround the cordon may be of some service, but if several localities are infected the cordon becomes useless and even harmful. When several localities are infected it is best to establish an epidemic zone which may even contain localities yet free from disease." They provide for "posts of observation, the posts to be established upon caravan routes, or frequently traveled roads, and to be under the immediate direction of physicians, to the exclusion of all other interference, and under the auspices of authorities who are required to maintain them.

"All persons passing these 'posts of observation' from contaminated countries must be examined," and under the discretion of the physician in charge people or merchandise may be disinfected or not, as he shall determine. "It is incumbent upon the Government to provide for the expenses occasioned by the personnel of these establishments, whether they are fixed or movable, wherever they are situated, and to furnish gratuitously all the means necessary for the care of the sick for disinfection, and for all that which is prescribed by the physicians in charge of these quarantine posts. This is an essential point to which the council and the sanitary administration call the attention of the local and governmental authorities."

In conclusion, they say that in all those districts affected last year, and in their neighborhood, it is necessary to "appoint speedily physicians for the municipalities, and a competent committee charged with carrying out from the present time a strict execution of preventive measures of hygiene and of sanitary police above detailed, and that without waiting for the reappearance of the malady. The localities threatened should be immediately supplied with all the medicaments and disinfectants necessary.

The local governmental authorities should announce by telegraph immediately every suspected case which may appear in the localities attacked by cholera last year or in the neighboring localities, and they should proceed in the treatment

of it as though it was a case of cholera; and they add that "the measures to be taken by the local authorities to prevent the spread of the disease from the contaminated into the uncontaminated regions should be more efficacious than they had hitherto been.

"These measures of defense will be put into execution promptly in upper Mesopotamia, Syria, and neighboring provinces. They will also be applicable to Hedjaz, where cholera raged at the date of the last pilgrimage, to wit, Djedda, Mecca, and Medina."

These measures were adopted by the superior council of health on February 24, 1891, and were very desirable; but in March, 1893, the "governmental authorities" had made no such provisions as had been wisely recommended by the superior council of health.

The next document in order is as follows:

THE NECESSITY OF PUTTING THE QUARANTINE ESTABLISHMENTS OF THE OTTOMAN EMPIRE IN REGULAR WORKING CONDITION WITH THE LEAST DELAY.

(Translation.)

In the presence of the contingency of the reappearance of cholera in Turkey, within a few months the council and sanitary administration believe it their duty to renew to the Imperial Government the observations which they have submitted, with many repetitions, in order to call the attention of the Government to the condition of the lazarettos of the empire. Among the establishments of this sort three only can be actually considered as destined to receive the quarantined when they shall be repaired and organized.

First, Cavak, destined for the traffic of the Black Sea. This establishment should receive with the least delay extensive improvements designed to put it in a satisfactory condition for the exigencies of the sanitary service. Later it should be enlarged, perhaps replaced; in any event reorganized upon a new plan. In the meantime, and, in this time of necessity the Imperial Government should place at the disposition of the sanitary administration a certain number of old vessels capable of serving as floating hospitals in order to supply the actual insufficiency of the establishment at Cavak.

Second, Smyrna. This establishment will be in a satisfactory condition when it has received some repairs to receive the traffic from the septentrional region of Anatolia, Constantinople, and the Black Sea.

Third, Beirut. The superior council of health have for a long time repeatedly made know to those in authority the insufficiency of this establishment to serve as a lazaretto for those traveling to the provinces of the southern part of the Empire. Its position in proximity to the city constitutes a danger for the latter. Besides it is not in a condition to receive the quarantined, which fact has been repeatedly reported by the council of health. It has also resulted in well-grounded complaints which have been presented by the persons who have been recently subjected to quarantine in this establishment.

It appears that the repairs asked and promised were but partially made, and too late. For these reasons the transfer of the lazaretto of Beirut is a matter which should receive attention as speedily as possible. The Imperial Government will have to choose an appropriate site to be designated upon the coast between the Isle of Rhodes and the coast to the south of Syria; by preference upon an island. It is unnecessary to state that the site should have a good anchorage for vessels, easy isolation, and be as convenient as possible for provisioning with food and water. It is upon this new site that the Imperial Government should erect an establishment capable of accomplishing the end proposed at the earliest date in order to prepare a lazaretto, which may become necessary at any moment. In time of necessity branch lazarettos will be provided for the traffic of the Adriatic.

Fourth. It is equally indispensable to create at the earliest moment a quarantine establishment at the entrance of the Persian Gulf for the defense of Mesopotamia and for the traffic of the Indian Ocean. This establishment should be situated at Fão, or in its vicinity. All the other quarantine establishments of Turkey, such as those at the Dardanelles, of Salonica, of Tripoli, in Africa, etc., should be considered absolutely unfit to receive travelers.

Fifth. It is most indispensable that the Imperial Government should provide with the least delay the above-mentioned lazarettos of Cavak, Smyrna, and of Syria; and the necessary preparations for the disinfection of the quarantined and of vessels. Besides the ordinary means of disinfection, chemical and mechanical, each one of these establishments should be furnished immediately with special apparatus for disinfection; especially with apparatus for steam under-pressure, similar to that which is used elsewhere regularly, in like circumstances, and which has very recently been used for the purpose of disinfection in the establishment in Egypt for the infected traffic from Hedjaz.

As to the provinces of Arabia and of the Red Sea, these establishments should be organized. In the near future a commission should be directed to investigate the establishments upon the Red Sea.

#### CONCLUSIONS.

1. The Imperial Government should reorganize speedily the lazaretto at Cavak, remove that of Beirut and transfer it to an appropriate location. A lazaretto should be established upon the Persian Gulf at Fão. Finally it should make important improvements at the quarantine establishments of the Red Sea, at Abou-Saad-Vasta, and, above all, at Camaran, for the purpose of assuring protection to the pilgrimages made to the holy cities in Hedjaz.

2. An indispensable condition, one which should dominate all others, is the acquisition of apparatus and special methods of disinfection (steam, etc.), which should be provided with the least possible delay for all the quarantine establishments because of immediate necessities, especially at Cavak, Smyrna, and Syria.

Chairman Dr. MAHE.

Read at the session of the superior council of health, March 19, 1891.

This report was supplemented by the following communication:

#### REPORT OF HIS EXCELLENCY DR. ARIF-BEY UPON HIS MISSION TO HEDJAZ.

(*Translation.*)

[Read at the session of the superior council of health, October 20, 1891.]

GENTLEMEN: I have the honor to present to you my report upon the mission with which you charged me at the meeting of the 14th of April, 1891, to proceed to the scene of the pilgrimage for the year of the hegira 1308 in the capacity of a special commissioner. At the same time the Imperial Government charged me to visit the lazaretto of Camaran before going to the holy cities, to investigate the condition of this important quarantine establishment. I immediately left Constantinople for Alexandria, thence by way of Suez, where I embarked and touched at the ports of Djeddah, Souakin, Massasuah, and Hodeida on the 18th of June, and soon thereafter arrived at Camaran. I passed two nights on this island, and during my stay was enabled to inspect two encampments of pilgrims from India who were there at that time. I was accompanied by Dr. Stiepovich, chief of the mission at Camaran, and the Sheik Muhammed Atta, vice-consul of England. With the concurrence of Dr. Stiepovich I took notes of some modifications and improvements which are absolutely necessary at the lazaretto of Camaran.

1. It is urgently necessary to construct three new encampments upon the bank, and two docks should be built of stone.



2. As the second and fourth encampments are not conveniently situated, it is best to suppress them; the material can be employed in the construction of the new encampments just mentioned.

3. It is well known that the soil of the island is salty and damp, and conscience will not permit us to compel the pilgrims to sleep upon it. There should be erected in the said encampments benches of wood, long and wide enough for a man to lie comfortably upon them. These benches should be built all around the sheds. The pilgrims will then have a comfortable bed, and can dispose of their effects underneath and thus avoid encumbering the place.

4. At the other lazarettos there are special buildings designed for rich people and also for families who do not wish to live in the sheds for 50 pilgrims. It is therefore necessary to build at Camaran in each encampment two structures designed for this class of people. Each building should have four compartments, each division having a private door. Two of the buildings already there can be adapted to this purpose.

5. Latrines must be built upon the shore, the same as in the lazaretto of Abou Saad-Vasta. If this is not possible movable water-closets must be fitted up.

6. At these encampments there are no kitchens for the preparation of food. This is a serious inconvenience, which must be remedied immediately. Each of the encampments should be provided with requisite ranges.

7. There has been constructed at Camaran a large reservoir, and at the side some wells. These works have been costly. Unfortunately the reservoir has already, given way, and is in no condition for use. For the time being each encampment has constructed three small reservoirs, which are not sufficient, and when there are a larger number at the lazaretto they are obliged to transport water on the backs of donkeys from the wells of the cities located farther up. I must add that of all these wells five only furnish good water. There are many complaints about the quality of the water furnished to the pilgrims. It is necessary to construct in each encampment two more reservoirs and to fill them with water before the first pilgrims arrive.

The water keeps very well even in the reservoirs already there. I have examined the water which stood in one of these for the past three months and found it very good. Another well should be sunk if drinkable water could be found.

8. It is necessary to construct in each encampment a building for fumigating.

9. For debarking and embarking the pilgrims recourse is had to small sailboats, and each pilgrim is obliged to pay 5 piasters.

This is a great inconvenience, for when the wind does not blow the boats can not land, much time is lost, and the Hadjis suffer much from the heat of the sun. The lazaretto of Camaran should be furnished with a tugboat and six large flat-bottomed boats. The expense of these would be covered at the end of a few years with the revenue resulting from the tax upon each pilgrim.

10. It is necessary to construct two large buildings for the military guard and two smaller ones for the officers, each of which should be provided with kitchens and water-closets.

11. Finally, it is necessary that the food be furnished by merchants after having been contracted for and the contract approved by the authorities.

After making this inspection I embarked for Djeddah, where we arrived after four days, and shortly after I left for Mecca.

In this city nothing has been neglected for the general cleanliness. Unfortunately, as you know already, the cholera had broken out there. This year they put the abattoirs and ditches at Mina on the east side and at the end of the valley. A military cordon has been established there and no victim of cholera has been permitted to enter the encampment of the pilgrims. \* \* \*

. At the lazaretto of Tor, we passed the customary quarantine of thirteen days.

During the time I visited the encampment, the hospitals of the pilgrims, and all the buildings. I observed that all the buildings for the pilgrims communicate, no matter from what country they come nor what the date of their arrival. This is a serious irregularity, and it is very fortunate that the cholera has not broken out this year in the encampment of Tor.

At Smyrna I profited by the detention of the vessel for twenty-four hours to visit the lazaretto of Clazomenes. At that time there were no persons in quarantine, but I visited the pavillion of disinfection, and Dr. Crenderopoulos explained to me the working of the disinfecting plant. In the pavillion there is room enough for another disinfecting chamber, but experience thus far demonstrates that one is sufficient.

(Signed)

DR. ARIF,

*The Vice-President of the Superior Council of Health.*

CONSTANTINOPLE, October 20, 1891.

The next report reiterates with much urgency former recommendations concerning quarantine, and shows that the suggestions of the superior council of health had not been made effective.

#### REPORT OF THE COMMISSION ON THE LAZARETTOS OF THE EMPIRE.

(Translation.)

[Presented to the superior council of health at its extraordinary session of the 22d of October, 1891.]

GENTLEMEN: In approaching for the second time within eight months the subject of the condition of the quarantine establishments of the Empire, the special commission recalls to the superior council of health the constant efforts which it has made for many years past to assist those who are in authority to reach a solution of the difficulties.

The report, dated March 19 of this year, entitled "Necessity of putting the quarantine establishments of the Ottoman Empire in regular working order with the least delay," which was addressed to the sublime Porte upon the contingency of the reappearance of cholera in Turkey within a few months, contained the substance of all the propositions that we have to make to you upon this great subject, and we present them without preamble.

1. In the first place, we proposed to have returned to the Imperial Government the lazarettos repeatedly declared improper for service at Beirut, Salonica, Gaza, and Tripoli in Africa; for these there would be obtained in exchange two sites, one upon the coast of Syria, another upon that of Tripoli, the essential conditions being the isolation of the buildings, good anchorage, sufficient area, and an assured supply of drinkable water, and a place which may be easily provisioned.
2. Concerning the lazaretto to be constructed upon the coast of Syria, you have repeatedly condemned it, because of its unfortunate proximity to the populous city of Beirut, which place grows from day to day. The site to be chosen in this vicinity should be in a district where the lazaretto will not be compromised in the near future, while meeting all the necessary conditions.

After having taken cognizance of the various places proposed, the commission believed it to be its duty to call attention to the sites of Abou-Halka, N. NE. of Beyreut, Nahr-el-Kelb, and Youmourtalik; this last being the least desirable because it is situated upon the coast of Caramanie, beyond Syria proper. The Imperial Government should send to these places a technical commission, to which should be added a member of the council of health, in order to choose a suitable site, and then erect an establishment capable of receiving the quarantined; such an establishment as is indicated by the latest progress of science.

In exchange for the lazaretto of Tripoli in Africa, declared useless because of its

bad state and its proximity to the city of that name, the Government should construct another establishment on a site chosen in the same manner and governed by the same conditions as the preceding. The commission think that there should be a lazaretto upon the coast of Tripoli, far from the other quarantine establishments of Clazomenes and Syria.

4. Concerning the lazaretto of Clazomenes we can not too strongly recommend its maintenance in a satisfactory condition by introducing all improvements possible. The erection of a chamber of disinfection constitutes an important progress in this establishment, and it may be necessary to erect a second, for which the place has already been arranged in the pavillion.

5. On the coast of the Black Sea we possess only the lazaretto of Cavak, which is situated in the narrow valley of Monastir-Aglizy, which has insufficient circulation of air, is without suitable anchorage, and without good drinking water. In our report above cited, March 19, 1891, we said that this establishment should be enlarged, perhaps replaced; in any event, reorganized upon a new plan. But two things confront us for the moment, two things without which we can not be guaranteed against a serious epidemic coming from the Black Sea. These are, first, the erection of two suitable buildings, well built, in the little creek of Monastir-Aglizy; and second, the establishment of a system which will supply water to the lazaretto of Cavak and the pavillion of disinfection which will soon be constructed there. The Imperial Government should consider this without delay.

6. In the Red Sea there is much work to be done at the lazaretto of Camaran. You have taken cognizance, gentlemen, of the reports of Drs. Stamakiadis and Stieповich; also, that of the consul of the Netherlands at Djeddah, and, finally, that of our vice-president, His Excellency Dr. Arif-Bey. These reports show that there is more than ever need for urgency in sending the technical mission according to the recommendations of the council.

This special mission, besides the inspector-general, Dr. Cozzonis-Effendi, will consist of scientific men of recognized ability to be named by the Imperial Government upon suggestions from the superior council of health. It will be the work of this commission to establish the basis of the reorganization of the most important of our quarantine establishments, taking into account the conditions which they observe of the pilgrims coming from the countries where the cholera is continually found, and to whom are attributed the ravages caused by the scourge of the two last pilgrimages. The first thing necessary is that the Imperial Government shall oblige the inhabitants of the island to evacuate it completely, and from this date, and to install them upon the neighboring coast, for, according to authoritative statements, it is to them principally that we must attribute the dangerous communication with the neighboring countries of Arabia.

This evacuation ought to be made rapidly if the Imperial Government wishes to order it. It is necessary also to send immediately two chambers of disinfection to Camaran; the same model as that at Smyrna, to be paid for from the funds of the quarantine reserve, which has already been decided by the council. These chambers should be erected upon the most suitable sites. Later, it will be necessary to send other disinfection chambers to the Red Sea, especially to the lazaretto of Abou-Saad-Vasta.

7. Finally, a special commission should visit the lazaretto for the Gulf of Persia to choose a suitable site on the coasts of Bassorrah or of Fão. Meanwhile, and considering the urgency, the Imperial Government should establish as soon as possible at Fão, or its environs, one or two buildings well arranged, and suitable to receive travelers. It is there that contaminated travelers coming from India should be subjected to quarantine, and all necessary measures should be taken to prevent the travelers from eluding the quarantine by debarking at Moham-



marah, whence they may enter at liberty the towns of Bassorrah, Bagdad, and other localities in Mesopotamia.

Such, briefly summarized, are the measures that the commission proposes to take without delay, and in an efficacious manner. Putting the quarantine establishments of Turkey in good condition, the reorganization of some, and the creation of those which are lacking, necessitates large expenditures which can not be approximately estimated until after the preliminary studies and plans are made, which is not the work of the council of health.

It is unnecessary to say that these expenses fall entirely upon the Imperial treasury; the expenses necessitated by the purchase of the arrangements for disinfection will be charged, as in the past, to the eventual surplus of the quarantine receipts. But it is clear that the efficiency of these arrangements can only be obtained when the Imperial Government furnishes suitable establishments which will permit them to do perfect work.

It does not belong to the superior council of health to suggest the methods by which the above-mentioned expenses are to be met. Doubtless the value of the establishments returned to the Imperial treasury, such as those of Beyreut, Salonica, Gaza, and of Tripoli in Africa, would compensate in part for the expenditures to be made. But there will remain a considerable deficit which the Imperial treasury should meet, whether it be by an appropriation for the entire expense, or whether by means of annual appropriations proportionate to the needs of construction, of reorganization, or of improvement of the quarantine establishments, we are unable to suggest.

In conclusion we make the following propositions:

First. To return to the Imperial Government the old lazarettos of Beyreut, Salonica, Gaza, and Tripoli in Africa, because they are absolutely worthless. It should establish the following lazarettos: One upon the coast of Syria in the vicinity of Beyreut, the commercial center of that province; one of less importance in the vicinity of Tripoli in Africa, and a similar one at the mouth of the Chat-el-Arab, and another at Fão.

It should reorganize those of Cavak and Camaran, improve and maintain that of Smyrna, also that of the Dardanelles, which can be used in case of urgent necessity. The considerable expense resulting from this work will be charged to the Imperial treasury.

Second. The preparations for disinfection should conform to the requirements of modern science, especially with reference to steam disinfecting chambers, which should be erected in all quarantine establishments throughout the Empire wherever thought necessary, and at the expense of the eventual surplus of the quarantine receipts.

Third. The superior council of health declares most urgent the prompt putting into execution of the measures proposed in the present report. The reasons for it have been many times laid before the Government of the Sublime Porte, especially in the document of the council dated March 19, 1891. The council can but regret that its reiterated reports have not been followed, and it rejects absolutely the criticisms upon this matter of which it has been the object, and which are without foundation. In consequence the superior council of health, as well as the sanitary administration, declare once for all that without the prompt and complete accomplishment of the propositions included herewith they can not guarantee the security and efficiency of the Ottoman quarantine establishments; and they find themselves under the trying necessity of declining all responsibility because of the present imperfect precautionary measures relating to maritime traffic, with the oversight of which they are specially charged.

If the council approves the conclusions of this report the commission proposes

that copies should be made in the French and Turkish languages and sent to His Excellency the Minister President, and that if His Excellency considers it proper, a delegation composed of members of the council should call upon His Highness the Grand Vizier to present them to him, following the usual custom.

Dr. J. MAHE, *Chairman*,

Dr. HAGEL,

Dr. VAFIADES,

Dr. STEKOULIS,

Dr. VITALIS,

Dr. COZZONIS,

*Members of the Commission.*

On the 8th of March, 1892, another document was issued designating those who were to go to the several places where it had been decided to establish lazarettos, and immediate action was again urged, "considering the urgent necessity for the prompt reorganization of our quarantine establishments," and to this end it was decided to send to each place a commission composed of "a physician to be designated by the superior council of health, an architect engineer, and a navigator." The commission appointed to go "to Syria, Tripoli, and the Red Sea was the inspector-general, Dr. Cazzonis-Effendi." For the Persian Gulf there was appointed Dr. Lubiez, sanitary inspector of Bagdad, and there was added to the commission the vice-president of the council of health, Dr. Hadji-Arif-Bey, together with an officer of construction, to be appointed by the minister of war, and an officer of the marines.

This report says further that "they express the wish that Dr. Duca, their sanitary delegate in Egypt, may be added to the commission, because of his familiarity with the locality of Camaran and vicinity, where he had been stationed for several years, because the mission is distant, fatiguing, difficult, and not exempt from dangers." They again call attention to the necessity for a quarantine station in Syria, by reason of the probable near approach of cholera, which had scarcely ceased in Damas and Beyreut, and because of the close intercourse between these places and the capital; and they ask for the appointment of Dr. Vitalis-Effendi, inspector of the sanitary service, assisted by an engineer architect and marine officer, to go to the coast of Syria and Tripoli to make the necessary investigations and plans, which were to be submitted to the inspection of Dr. Hadji-Arif-Bey when he should return from the Red Sea. Bassorah and the Persian Gulf were to be left to the inspection of Dr. Lubiez with the other officials.

#### REPORT OF THE COUNCIL OF MINISTERS UPON THE SANITARY AND HYGIENIC MEASURES TO BE TAKEN AT THE HEDJAZ.

*(Translation.)*

[Submitted to the superior council of health at its session of the 25th of March, 1892.]

Following the instructions sanctioned by the Imperial order and communicated to all the villages upon the subject of the sanitary measures to be taken to prevent the reappearance of cholera, the villayet of Hedjaz has instituted a commission to put into execution these instructions. This commission has presented a report, followed by a manifesto from the council of administration of the villayet. The minister of the interior, having had an understanding upon this subject with the imperial department of health, has addressed to His Excellency the Grand Vizier a report, accompanied by all the documents in the case. Following this report, which had been read in the council of ministers, was the request to raise to 156,000 piasters (about \$8,000), the annual appropriation of 64,000 piasters made for the service of the public health at Mecca, and at Medina during the epoch of the pilgrimage; also to grant a credit of 700 pounds at one time for the purpose of

buying some refuse carts, to be drawn by three mules, and to employ three sweepers for each quarter of the city, to remove the filth from the streets of Mecca.

To send 1,000 tents, 700 for Mecca and Medina and 300 for the pilgrims coming by sea who may be subjected to quarantine.

To send without delay six physicians and three pharmacists, who should be employed provisionally in the city of Mecca during the epoch of the pilgrimage, and to name with a permanent title a physician at Medina, and to pay their salaries.

To allow a salary of 1,500 piasters to the president and secretary of the commission of public health to be instituted at Mecca.

To delay until later the work of canalization at Medina, which should necessitate an expenditure of 1,200 pounds; also to delay the construction of 50 barracks at Medina during the epoch of the pilgrimage, the construction of which would require the amount of 4,000 pounds.

For those having the authority to do so, after having consulted the commission of public health, to proceed with the plans for the canalization of the drains at Mecca.

The council, having deliberated upon these propositions, has decided that by reason of the necessity of putting into execution of the above-mentioned instructions there will be prepared immediately the necessary medicaments. As the city of Medina is provided with a city physician the seven physicians requested for the epoch of the pilgrimage should be chosen from the military physicians, four from the seraskerat, two from the admiralty, and one from the grand commander of artillery. In the same manner the pharmacists should be furnished by these departments. All these officials will be paid, above and beyond their salaries, a sum equal to their salaries, also their traveling expenses.

To avoid useless expense these physicians and pharmacists must be sent by the vessel which transports the rations to the Seventh army corps. In addition, the council has decided to add to the annual credit for the service of public health at Mecca and Medina, the 92,000 piasters requested. As to the credit of £700 asked for the purchase of carts, etc., and the salaries to be allowed to the president and secretary of the commission of public health, the council decides that these expenses can be provided for locally. Finally, as regards the expense of canalization and of the purchase of tents, Col. Nouri-Bey having been consulted, is of the opinion that the pilgrims are always furnished with tents, and in consequence the tents can always be procured by renting them in case of need and indemnifying the owners when they are destroyed by fire. If, on the contrary, new tents are purchased, their cost will necessarily exceed the rent, and they will serve but one year.

As to the canalization of the place Dr. Nouri-Bey has expressed the opinion that it is impossible, in view of the configuration of the land, and that it is necessary to be content with the local use of cesspools, employing in some neighborhoods carts for cleaning the customary ditches. The council, taking into consideration the advice of Dr. Nouri-Bey, has decided not to purchase tents and to request the minister of the interior to do whatever may be necessary concerning the subject of canalization after having an understanding with the authorities of the villayet.

The above decisions of the council of ministers having been sanctioned by imperial order, the order of His Excellency the Grand Vizier, dated February 17, V.S., commands that the seraskerat, the ministers of the interior, marine, and finances, the sanitary department, and the grand master of artillery will do that which is necessary to conform with its decisions.



REPORT OF DR. STEKOULIS RELATIVE TO THE ESTABLISHMENT OF THE LAZARETTO  
AT SINOPE.*(Translation.)*

[Presented to the superior council of health at its meeting July 19, 1892.]

GENTLEMEN: According to the decision of the superior council of health at its meeting of July 8, which was sanctioned by Imperial order, the mission appointed to visit the lazaretto of Sinope started immediately for that place. It was composed of Dr. Ibrahim Pascha, Drs. Nouri-Bey and Stekoulis, and Dr. Jerony Makis, sanitary physician, and other officials.

They had in view the inspection of the port of Sinope with the object of establishing there a provisional lazaretto to receive those travelers who might be subjected to rigorous quarantine at that port.

They found upon examination a peninsula extending a considerable distance into the Black Sea, its extreme point being from 600 to 900 feet above the sealevel; the locality was considered by them in every way suitable for the purpose of a quarantine station capable of containing 1,000 people; they set forth in detail the advantages of the place and began the erection of barracks, which were 30 feet long, 21 feet wide, and 10 feet high, situated 300 feet apart, each to contain from 50 to 60 persons; also the construction of two hospitals, the size of the buildings so adjusted as to give to each person 3 square meters apiece. To begin with, they decided to build 12 barracks where they could lodge between 300 and 400 people, and established two camps for the choleraic, the balance being for suspected or noninfected people.

The rapidity with which this quarantine station was put in order is explained by the commission to be due to the fact that all the materials and workmen necessary to build it were furnished by the local authorities of Sinope by Imperial order. Having erected the barracks they called upon the superior council of health to organize it and supply the place with all the necessary materials for its equipment. At the date of our visit the lazaretto was not completed, the reason being that there were no funds to put it in proper order.

NOTE.—Sinope is on the south shore of the Black Sea, situated about half way between the eastern and western extremities, and is the nearest fine seaport to Erzerum; it possesses a good bay and is one of the stopping places for coasting vessels on the south shore of the Black Sea and is used at present as a quarantine establishment for people coming from that part of Persia. It is considered supplementary to the quarantine station at Cavak, which is located where the Bosphorus enters the Black Sea, but a few miles from the city of Constantinople, and which the superior council of health have so frequently condemned.

## HYGIENIC MEASURES PROPOSED BY THE MEDICAL CIVIL COUNCIL FOR THE PURPOSE OF PRESERVING THE CAPITAL AND THE PROVINCES OF THE EMPIRE FROM THE PRESENT CHOLERA EPIDEMIC, AND SANCTIONED BY IMPERIAL ORDER.

*(Translation.)*

The medical civil council, preoccupied by the danger which menaces the capital and the Empire in general on account of the present cholera epidemic (1892), and conscious of the importance of the duty which is imposed upon it by regulations, hasten to submit to the superior authority a succinct account of the hygienic measures necessary to be put into execution to preserve the capital, as well as the other parts of the Empire, from the murderous epidemic.

When a country finds itself menaced by a contagious malady of foreign origin prevailing in its vicinity the first subject of immediate importance is to take counsel as to the most suitable measures for preventing the invasion of the country by this malady; afterwards, in case that it is impossible to prevent its introduction, efforts should be made to lessen its ravages and to hasten its extinction.

The first step, comprising the prophylactic measures, is the following:

To apply the quarantine measures immediately in a manner rigorously exact and serious, in order to prevent the introduction of the malady by means of persons or effects carrying the disease germs.

Thus, there should be submitted to quarantine measures, not only the travelers from the countries where the epidemic exists in full activity, but also the travelers from countries newly contaminated or suspected.

We believe it superfluous to enlarge upon the necessity or upon the efficiency of the quarantine measures relating to pestilential maladies, and to cholera in particular. It is a fact generally proved and admitted, and there is no need to demonstrate it. The numerous examples of the countries which by sanitary isolation, persistently and rigorously maintained, and by a strict and absolute observation of the quarantine measures, have succeeded in preserving themselves, more than once even, from the epidemics which have ravaged the greater part of the neighboring countries, have long since proved the preservative powers of quarantine measures. It remains, then, for the superior authority to take the necessary measures which are imposed upon it by the circumstances.

Afterwards efforts should be made by certain health measures and hygienic police regulations to place the country in such a condition of salubrity that the disease can not find propitious soil for its extension, in case that it is impossible to prevent its introduction.

The health measures and the sanitary or hygienic police regulations necessary at all times are of extreme urgency at a time when an epidemic is imminent.

First, Streets and highways: It should be seen that all the streets, without any exception, are in perfect condition of cleanliness; that they do not contain either animal or vegetable detritus, the mass of detritus and filth of all sorts with which our streets are ordinarily littered, and which is met with at each step in all the streets, even in the principal arteries and public places, and especially in the outskirts and the little streets. This mass of filth should be made to disappear from the city and taken far from it.

It should be strictly forbidden to throw into the streets the refuse from places of industry or from kitchens, for this can but be prejudicial to public health at all times, because of the decomposition of the detritus and the poisonous gases which emanate from it. It is above all very pernicious in time of epidemic. A police inspection and oversight both severe and rigorous should be established to watch this matter, and infractions should be severely and immediately punished.

Special care should be taken to see that carrion thrown into the sea is not left in proximity to inhabited places.

We should remark here that the measures taken to cleanse the highways should be rigorously applied to all streets, absolutely without exception, for if the regulations are applied exclusively to some streets and we are content with putting in a sanitary condition and maintaining in cleanliness only the principal arteries and the most frequented streets, and neglect the quarters but little frequented, the little streets and alleys, lands idle and not inclosed, vegetable gardens scattered through the city, etc., we arrive at no satisfactory result. These neglected quarters will form in time of epidemic by their bad hygienic conditions so many pestilential centers, which will contaminate the others, and from which the evil would radiate in all directions.

It is then essential that the application of the sanitary measures, as much in that which regards the highway as in that which will be indicated later, should be extended to all points of the city, and that there should be no exception.

Second. The gutters and latrines: The subject of the gutters and latrines is one of the most important connected with the public hygiene and the salubrity of cities. The cleanly condition of the gutters, the water-closets, and the general places of deposit of night soil is one of the principal means necessary to preserve

the health of the locality and of the human habitation. It is hardly necessary to state that in our city the gutters and latrines do not show the most necessary or even the most elementary conditions of good construction or maintenance; but that in more than one part of the capital, and in the greater part of the other cities of the Empire, the gutter is open to the sky and is part of the street itself. Have we need to cite the notorious gutters of Cassim-Pasha, of Balata, the Rue Araba-Djilar de Haskeui, and so many others? This state of things to which the council has long since called the attention of the superior authority is very prejudicial to public health, and constitutes a very great danger during the epidemic of a malady, which is propagated principally by the alvine dejections.

The Imperial Government has perfectly comprehended it, and the orders given personally by his Imperial Majesty for the vaulting of the gutter of Cassim-Pasha prove in an unquestionable manner that the chief of state and his Government have taken a resolution to remedy this evil. We wish, however, to recall to the superior authority the fact that the gutter Cassim-Pasha, near the Imperial residence, though being the principal gutter offering these antihygienic conditions, is not the only one.

Further, we desire to call the attention of the superior authority to the matter of the cleansing of gutters. If there are gutters which need cleansing we should proceed to this cleansing in the shortest possible time, and before the least cholera manifestation occurs, and without omitting even the most minute precautions of disinfection, for in case the disease should be introduced into the capital it would be the greatest imprudence to uncover the gutters in order to cleanse them. This would contribute to the development of the malady.

We desire to call the attention of those in authority to the excessively pernicious condition of the public latrines and urinals in our city. It is urgent that these places should be put and kept in good condition.

We would suggest that among the means recommended for the disinfection of private and public water-closets the sulphate of iron, sulphate of copper, chloride of lime, lime itself, phenic acid, coal tar, powdered charcoal, sulphuric acid of commerce, largely diluted, are all useful.

Third. Khans, barracks, hospitals, prisons, schools, and other habitations of this sort, should be purified and disinfected. Maintaining the cleanliness and ventilation of these establishments is very necessary and worthy of the solicitude of all those in authority. Those buildings which are overcrowded by persons who are very negligent in all that relates to the most elementary principles of hygiene form or can form so many pestilential centers from which a contagious malady may radiate to the environs. We can cite many examples in support of that which we have just said. It is then indispensable and urgent that the buildings of this category, the barracks, the hospitals, the khans, the hotels, the odas of the Bekiars, the habitations of the emigrants, and of the Jews (especially those of Haskeui, of Ortakeny, of Balata, of Coujgoundjouk) should be watched very carefully by the authorities. We believe that it will be very useful to the general health that the officials charged by the Imperial Government with watching over the public salubrity should watch also in a general manner over the hygienic conditions of those establishments without its being considered as an intrusion upon the functions of the military authorities, or others upon which these establishments may depend, for the bad condition of any one of them, as we have already indicated, may influence in a pernicious manner the general health.

Further, crowding people together constitutes an incontestable cause of maladies during the summer. We therefore propose that the Government should order the promulgation of the vacations of all the educational establishments. As to private habitations, the authorities should exact that they maintain good conditions of cleanliness and disinfection. It can easily recommend to their inhabitants, by means of the municipal authorities, the care required to maintain good hygienic conditions.



Fourth. Abattoirs and butcher shops: The cleanliness of these establishments ranks among the most essential to maintain the health of the city, and should be closely watched. The authorities should demand that they be kept in good hygienic condition.

Fifth. Cemeteries and burials: We would call the attention of the superior authorities in a general manner to the subject of cemeteries located in the neighborhood of habitations. It is particularly urgent that the authorities should prevent burial in these cemeteries and that they demand that in the other places of burial the grave should be sufficiently deep.

Sixth. Special establishments: We combine under this title the depots of rags, of horn, of bone, of skins the tanneries, etc., which in ordinary times constitute a neighborhood very unhealthful for the quarters in which they are placed, and which in times of epidemic become incontestably pestilential centers, very powerful and very dangerous. From the time, then, that there is fear of a cholera epidemic the authorities should immediately have them transported as far as possible from the city. Among this class of establishments we would place the manufactories of butter, of which the number is rather large at Constantinople, and especially at Makrikeuy, at Kassim-Pacha, at Yag-Kappan, and elsewhere, which follow the business of making by nameless mixtures the so-called "butter of Siberia." These manufactories, which slowly poison the unfortunate public by their abominable products, may in time of epidemic become so many pestilential centers. As to the manufactories from which the emanations are not deleterious, as, for instance, the manufactories of spirituous liquors, the authorities should watch that they are maintained in a state of satisfactory cleanliness.

Seventh. Restaurants: Public kitchens, patsadjis, skembedjis, and taverns. These establishments should be watched closely and constantly, because their proprietors, seeking exclusively their own pecuniary interest and not at all the health of their customers, neglect the most elementary principles of alimentary hygiene. Some by ignorance; others by the desire for gain. Some because of the bad quality of the food prepared by these restaurateurs, or it may be by the bad condition of the utensils in use, which are dirty and not tin lined. Food prepared or cooked for several days, etc., often provokes derangements of the digestive organs, which in time of the cholera epidemic can easily become serious. These establishments should be, then, closely and incessantly watched. An oversight should be exercised in a special manner over the Bakals, of which the alimentary preparations are in general of very bad quality. It is desirable that these working people should be forbidden from preparing food, or at least the preparations and the utensils should be very rigorously watched.

Eighth. Alimentary commodities: The oversight of public alimentation, the search for and the repression of adulterations of all sorts, is one of the principal duties of the authorities. This oversight which is necessary, or rather indispensable, at all times, becomes a condition sine qua non in a time of epidemic, and above all, in a choleraic epidemic. We ought, then, to watch closely and in a very rigorous manner the different materials composing public alimentation. We should exact that they be of good quality, pure, fresh, and free from all adulteration. Such are meat, fish, milk, eggs, bread, and other important materials; all the products of the sea, vegetables, and fruit. The sale and use of some others should be absolutely forbidden. Such are preparations of pork, badly preserved and badly prepared; also the indigestible preparation known as *oun helvassi*, and other preparations constituting almost all the sole nourishment of the lower classes, and which by the great heat do not fail to produce diarrhea, which is much to be feared during a cholera epidemic. Mussels should be absolutely forbidden in time of cholera, as well as certain salted and badly preserved fish. Green fruits, unripe or overripe, spoiled or rotten, should be destroyed.

The moderate use of fruits and vegetables, well preserved, ripe, of good quality, and not spoiled, is not in the least harmful in time of cholera. They are in nowise capable by themselves of producing a case of cholera, and still less an epidemic. It is the abuse of fruits and vegetables or the use of unripe fruits or those spoiled and rotten which produce derangements of the digestive organs very dangerous in a choleraic epidemic.

Before closing we would call the attention of the superior authorities in a special manner to the subject of drinkable water. The use as a drink of water of bad quality, like that which is served to the greater part of the inhabitants of Constantinople, engenders a crowd of maladies extremely prejudicial to the public health, and becomes in time of epidemic one of the indirect and predisposing causes of choleraic attacks.

These are the principal measures which, if applied in a vigorous and sincere manner, render a locality salubrious at all times and contribute very efficaciously to preserve it from an epidemic. In case of imminent danger these measures, added to the quarantine, are the base of the defense of a country menaced by a choleraic epidemic, and form a group of preventive measures by means of which we can keep the evil at a distance. As to those of which we should make use in case that we can not succeed in preventing the introduction of the disease, the council should not fail to present to the superior authorities at the proper time the programme of measures to be taken and the hygienic prescriptions necessary to protect the public against the evil.

#### CONCERNING QUARANTINE REGULATIONS.

From the Turkish documents obtained from the officials in Constantinople it is shown that as far back as 1865 the most stringent regulations were prescribed concerning quarantine against vessels and people coming from infected countries, and these regulations have been amended and renewed from time to time as science has pointed out the methods of improvement. The health officials said that the difficulty has been to get the regulations carried into practical working effect. The quarantine regulations of 1865 would be considered severe even now, but they have failed to protect the country from the invasion of the disease, not because the proposed methods were ineffective, but because they could not be made practical for lack of money. At the best managed station, supplied with many modern appliances, as, for instance, that of Clazomenes, near Smyrna, the methods in use, which are considered effective by the Turkish officials, would not be tolerated for a day at any quarantine station upon our coasts. We were informed that at Camaran, which is perhaps the most prominent station in the Turkish dominion, they are not prepared to carry out the quarantine regulations, and the work is not so well done as at Clazomenes. At Cavak it is no better; the appliances are inadequate and the quarantine force much too small to properly attend to the work which comes to these stations.

The quarantine regulations of the Ottoman Empire for 1867, article 12, prescribe "that all old clothes and rags coming as merchandise on any ship from cholera-infected countries shall be submitted to rigorous inspection and shall be destroyed by fire if it is judged necessary; that all stuffs which have been used or in use, wools not washed, old cottons, hair, feathers, skins not manufactured, and other débris of animals in a foul state, and which are considered susceptible merchandise, must be submitted to the usual means of purification." These regulations were reaffirmed by the Government and republished in the quarantine regulations of 1891, article 11. From this it appears that rags and old clothes are sent from India and other choleraic countries even in the time of epidemics and that they come on the same ship with the pilgrims. The regulations speak of rags as being "eminently susceptible of infection" and require them to be made the subject of a special inquiry by the quarantine officials.

## MEASUREMENT AND DISINFECTION OF VESSELS.

The rules for the measurement of vessels printed in the Turkish regulations of 1867 are based upon the old English rule of allowing a proportion of two persons to each 3 tons of registered measurement. In 1891, however, the rule was changed, and they are now required to give to each pilgrim at least 9 feet of surface and 54 cubic feet of air space.

The regulations of 1891 require that vessels carrying a small number of pilgrims coming from infected countries shall cause them to disembark at Abou-Saad-Vasta for examination, and, if necessary, detention; but those carrying larger numbers must go direct to the station at Camaran. Abou-Saad-Vasta is a branch of Camaran, where the smaller trading ships doing business along the coast are quarantined; if, however, any vessel has had cholera on board while on the voyage, then she is required to go direct to the quarantine station at Camaran.

The investigations we made, the conversations with sanitary officials, and the documentary evidence presented, lead to but one conclusion: Effective quarantine is not maintained by the Turkish Government.

The people do not demand quarantine; they resent it. Their religious convictions and teachings determine their action. Responsibility for affairs which they now consider beyond individual control is placed upon the Almighty. "God is great." He sends the cholera, and it is not for them to interfere with His decrees; and any device which would restrict their movements to or from the "holy cities" would cause serious disturbances. Upon several occasions the pilgrims have defied quarantine restrictions, lax as they now are, and have revolted against the measures taken to prevent them from accomplishing the one great end in life, the journey to Mecca. An attempt to establish strict quarantine would doubtless result in widespread rebellion against the present Government and might result in its overthrow. The sherifa of Mecca is the ruler of the province of Hedjaz, in which are situated the "holy cities," and he already causes great apprehension to the Sultan because of the influence he exercises over the pilgrims, and he has on more than one occasion defied the orders of the Sultan, who has difficulty even now in maintaining supreme authority over that province; further proscriptive measures would almost certainly precipitate open revolt, especially if the measure was known or suspected to emanate from "Christian dogs." The Sultan may personally desire to have perfect quarantine establishments maintained throughout his dominions, and we were informed by those who have conversed with His Majesty upon this subject, that such is his desire, and that he has repeatedly issued orders to have the work performed; but this has not and will not be done as long as the conditions remain as they are at present.

To wait for the Ottoman Government to do this work is simply to invite epidemic, for their present quarantine service is not much more than show. A chain is no stronger than its weakest link, and in the chain of quarantine stations in the Ottoman Empire every one is a weak link, and under existing conditions it is not to be expected that they will be much improved.

Dr. Shakespeare relates that during a recent pilgrimage a caravan coming to Mecca accompanied by native physicians was stopped at the "Cordon Sanitaire," some miles from the city. The physicians reported to the sanitary officials a state of "perfect health" among the pilgrims, and that no deaths had occurred. They were permitted to pass on and introduced cholera into Mecca, which became epidemic; investigation was made, and upon examining the ground where the caravan had its last camp before they approached the "Cordon Sanitaire," 16 newly made graves were discovered. We have elsewhere reported similar occurrences at the most thoroughly equipped quarantine stations, showing the entire worthlessness of the present methods.

There are a good many lepers in Constantinople. The leprous Mohammedans are



restricted to a certain quarter of the city; the others roam about as they please, peddling, vending fruits or sweetmeats. When the disease renders them unable to do anything more they are taken to a large hospital for lepers at Scutari, where they are kept until they die. One of the health officers said that among the medical profession in Constantinople there was a feeling that leprosy is a race disease and does not affect people who are not in some way allied with the particular race affected, and that other races do not contract the disease, although they may be in contact with it. He said the researches here made by competent men tended to confirm this view, a position which is not maintained by scientists elsewhere.

The present epidemic of cholera, which we thoroughly investigated at this point, will be referred to later on.

March 16 we reached Athens. The U. S. consul, Mr. Monatt, informed us that no rags were shipped direct from Greece to the United States, but that they go to England undisinfected. The Greeks are especially averse to vaccination, and smallpox is almost always present; the people do not seem to dread it, although at times it is very severe. There is but little merchandise sent from this place to the United States, and no emigration. There are no disinfecting establishments here. March 19 we reached Corfu and called upon Consular Agent Raymond. From this place the principal exports to the United States are dried fruits, wine, and oil; there is no emigration and no opportunity for disinfection. As at other places in this part of the world, they have smallpox almost continually; it is mainly confined to the poorer classes, who live in narrow, crowded streets, and are filthy in their manner of life; they resist vaccination. The British consul, Mr. Reed, who was present at our interview, and who has been a resident of this place for a long time, reiterated the statements concerning smallpox, and said that there was but little hope of making headway against the disease because of the positive aversion of the people to vaccination. Rags from here go to England.

March 21 we reached Malta and called upon U. S. Consul John Worthington, from whom and the vice and deputy consul, Mr. J. F. Balbi, we obtained the following information: A great many rags are shipped from Malta to England; they are gathered in Malta, Tripoli, Tangiers, and the neighboring coasts; they are baled and sent away without disinfection; there are no means here for the disinfection of rags or other commodities from Tripoli or Tangiers; and on the neighboring coasts, from which rags come in large quantities, smallpox is almost always present, and there are frequent outbreaks of the plague and of a dangerous type of typhus fever, both of which diseases are quite severe in the villages on those coasts at this time, and strict quarantine regulations are now exercised by the Government of Malta against ships which have touched at ports in those countries.

During the recent epidemic of cholera stringent quarantine regulations were enforced by the local government, and, as a consequence, trade in Malta was killed, for the reason that commerce is largely maintained by shipments from Russia, mainly from Odessa. At the present time quarantine regulations are in force against the Russian ports; also from the ports of Tripoli and Tangiers, where the plague and typhus exist. The situation of Malta, lying, as it does, in the direct route for vessels from India and from the Black Sea, renders the island peculiarly liable to infection; hence the anxiety of the Government to maintain strict quarantine whenever serious contagious diseases exist in any country having commercial relations with this place. Upon the island the British Government maintains large hospitals, to which sick soldiers and sailors are sent from India, and the authorities leave nothing undone to prevent the introduction of contagious diseases, especially cholera.

The physicians of Malta, especially those associated in any way with the government of the island, do not entertain the same views with reference to leprosy that are entertained at Constantinople, as the following law, which is rigidly enforced, demonstrates:

FOR CHECKING THE SPREAD OF THE DISEASE COMMONLY KNOWN AS LEPROSY.

Whereas it is expedient to make provisions for checking the spread of the disease commonly known as leprosy, it is hereby enacted and ordained by his excellency the governor, with the advice and consent of the council of government, as follows:

ARTICLE 1. Every physician or surgeon who in the exercise of his profession observes any case of the disease known as leprosy shall within twenty-four hours make a report thereof to the chief medical officer. The same obligation to make the said report lies on the head of the family of any person suffering from the said disease, and in his default on the nearest relative residing in the same house in which the person suffering from such disease dwells, as well as on the person who occupies or has the management of the house or other place in which the patient dwells. In this case, however, the term for making the report referred to in the preceding paragraph is one month, to be reckoned in regard to cases of leprosy existing before the promulgation of this ordinance from the day of such promulgation, and in regard to all other cases from the day on which the said person becomes aware of such disease.

The punishments for any breach of the provisions contained in the preceding paragraph shall be those established for contraventions.

ART. 2. It shall be the duty of the superintendent of police to make to the said medical officer a report of any cases of the disease mentioned in the preceding article of which he may be aware.

ART. 3. If the chief government medical officer, upon the receipt of the report referred to in article 1, be of the opinion that the person therein mentioned is suffering from the said disease he shall immediately communicate such opinion to the governor in writing, and in any such case the head of the Government may by warrant under the hands of the chief secretary to the Government order that such person shall be removed to an asylum for lepers in these islands, to be there detained during the whole period of the disease.

ART. 4. Whoever shall knowingly harbor, or cause to be harbored, any person suffering or suspected to be suffering from leprosy, with intent to conceal such disease, or to prevent the removal of such person to the asylum referred to in the preceding article, shall be liable to the punishments established for contraventions.

ART. 5. Persons detained in the said asylum may be seen by their relations and friends under such regulations as shall be made by the head of the Government.

ART. 6. In the said asylum males shall be separated entirely from females.

ART. 7. Each person detained in the asylum shall be maintained at the expense of the Government, saving the right of the Government to be reimbursed by those who are bound according to law to supply maintenance.

The officer in charge of the asylum may, however, allow persons therein detained to provide meals at their own expense.

We were informed that this regulation is rigidly enforced, and that in consequence no cases of leprosy can be seen upon the streets.

The following regulations relative to quarantine are in force at this time :

#### GOVERNMENT NOTICE.

His excellency, the governor, having heard the opinion of the board of health, has been pleased to direct that Government notice No. 42 of the 4th of March, 1893, is to be modified and that the following regulations are to be observed, viz :

1. Exclusion from the harbor with provision for coaling under such restrictions as may be in each case directed by the collector of customs.

The following shall not be permitted to enter the harbor, but may be allowed to coal and take provisions in strict quarantine, with the least delay, and subject to

the orders of the collector of customs ; and shall in all cases be ordered after coaling to quit with all dispatch:

(a) Vessels with pilgrims from the East.

(b) Vessels having cases of cholera on board.

(c) Vessels which have had on board a case of diarrhea, cholera, or any disease with symptoms resembling cholera, either among the passengers or crew.

(d) Vessels from North and South America when cases of yellow fever have occurred on board during the voyage.

(e) Vessels arriving from Arabian ports in the Red Sea which have not been admitted to free pratique at Suez and Port Said.

2. Quarantine for fourteen days:

Vessels arriving from the villayet of Tripoli shall not be admitted to pratique in these islands unless fourteen days have elapsed from the date of their departure.

3. Quarantine for ten days for provision for handling cargo in quarantine:

(a) The following shall be subject to a ten days' quarantine, but shall be permitted, under the directions of the collector of customs, to discharge goods (which are not susceptible of communicating contagion) by means of the vessel's crew on lighters, or to employ, for handling cargo, local laborers under ten days' quarantine, viz: Vessels arriving from any port without a clean bill of health.

4. Medical inspection:

(a) All vessels arriving at Malta shall undergo strict medical inspection.

5. Passengers:

(a) Passengers arriving by any vessel subject to quarantine are required to undergo the same restrictions as the vessel on which they arrive.

(b) Passengers arriving direct from England on vessels having a duly qualified medical officer on board are to be allowed to land without medical inspection, provided that the medical officer in charge on board shall declare on oath that during the voyage there has not been on board a case of dysentery, diarrhea, cholera, or any disease with symptoms resembling cholera, either among the passengers or among the crew.

(c) The declaration above referred to shall be countersigned by the master of the vessel.

(d) No passengers and no members of the crew on board a vessel carrying pilgrims are allowed to land.

6. Susceptible goods:

(a) The importation of rags, raw silk, hair, and feathers is prohibited.

(b) The importation of soiled wearing apparel before disinfection is prohibited.

(c) The importation of vines, vine shoots, vine leaves, or roots from any port of the Mediterranean is prohibited.

(d) The importation of grapes, or supports used in the cultivation of vines, vegetable earth, vegetable or mixed manure, is prohibited unless the importation is accompanied by a sworn declaration made by the shipper before the British consular authority of the place of its origin, to the effect that the shipment does not contain vine plants or cuttings, or that its contents come from nurseries, hot-houses, fields, or gardens which are 200 yards distant from the nearest vines or vineyards, and that moreover the phylloxera is not known to exist at the place of origin.

(e) Provided, however, that the collector of customs may grant permission for the importation of plants and vegetable produce under proper restrictions when application has been made, and the precautions necessary are established, before the shipment leaves the place of origin.

By command.

G. STRICKLAND,

*Chief Secretary to Government.*

PALACE VALLETTA, *March 10, 1893.*



Another order issued by the governor prohibits the importation of cattle of any kind from Egypt, Naples, Calabria, and Sicily; also of wool, hides, skins, horns, bones, and hoofs from countries where epidemic diseases prevail; that vessels arriving in Malta having live cattle on board must subject the cattle to inspection in the "Bovile." It also prohibits the importation of cattle from the Black Sea or Sea of Azov, and that all cattle landed must be subjected to a quarantine for a period of fifteen days, and swine arriving from Albania and Greece shall be subjected to a twenty days' quarantine. Dogs are subjected to three months' quarantine.

There are no cases of cholera in Malta, but a few occurred on vessels which were quarantined.

March 22, we reached Palermo, where we learned that the U. S. consul left the city the day before on account of illness. The vice and deputy consul, Carmino G. Lagano, gave us the information we desired. No rags were sent from Palermo to the United States; they are sent to England. He said there was not much emigration from Palermo, and there is no adequate means to disinfect baggage. The trunks and boxes of emigrants are put in the hold of vessels and fumigated with sulphur, but the packages are not opened; he informed us that emigrant ships sailed from Palermo to the United States October 4 and 8, November 14, and December 2. No examination is made of the emigrants because "it would have to be repeated at Naples, and for this reason it is not done here." He said that on February 4, 1893, some goods were sent here from Marseilles for shipment to America; they were hides, hair, and wool; he did not know their point of origin, but they were disinfected in the ship's hold and sent to New York. There were no vessels in port bound for the United States during our visit.

The following is the form of certificate issued from this consulate:

STEAMSHIP MONTEBELLO, CONSULATE OF THE UNITED STATES,  
*Palermo, Italy, October 8, 1892.*

I hereby certify that the personal effects and baggage of the steerage passengers of the Navigazione Generale Italiano, steamer *Montebello*, sailing from this port for New Orleans had been at their suggestion fumigated with sulphur for a period of six hours, and thereafter it has been unpacked and freely exposed and disinfected by exposure to steam for one hour, the steam being of a temperature of 100°.

I further certify that I find upon investigation that there are no steerage passengers from any infected district upon said steamer, and that said passengers have not been in contact with any person infected, or from the infected localities of Europe.

Given under my hand and the seal of this consulate the day and year above written.

CARMILLO G. LAGANO,

*Vice-Consul.*

Mr. Lagano informed us that all emigrants from Palermo come from the interior of Sicily, where they know there is no cholera, and therefore certify as above. Said he: "The trunks are opened and the baggage placed upon the edge while being fumigated in the hold. The Italian Government will not procure a building for disinfection because it can be better done in the United States, and they do not care to do it here." We requested to be taken to the steam disinfecting apparatus, when it transpired that there is no such thing here. Mr. Lagano, the vice and deputy consul of the United States, is the son of one of the principal owners of the Florio Rubatino Steamship Line, and is also the agent of the Phelps Steamship Company at Palermo. Mr. Lagano said "that at this date no emigrants go from here because of the strict regulations in the United States, which make them much trouble, and the disinfection spoils their clothing." In answer to our questions he said: "Emigrants may take passage from Palermo for either Naples

or Messina, and then keep on to the United States and thus avoid disinfection or inspection, and this is done; but there is no way to avoid it, because baggage put on board, supposed to be destined to a local port, is not disinfected, and once on shipboard the emigrant may keep on to New York." Being questioned further in relation to rags, Mr. Lagano said: "There are some rags which go from here to the United States, but they are all disinfected according to the regulations of the Treasury Department." We requested him to take us to the disinfecting chamber, when he replied: "Oh, the rags are disinfected in the hold of the vessel which takes them." He then said: "Many rags go from Naples to England and some go from here; they are dirty things, and in my judgment the best thing to do with them is to burn them, for I believe they carry disease."

Mr. Lagano notified the agents of the steamship companies doing business at Palermo, by printed circular, dated the 14th and 16th of September, 1892, that baggage and effects of persons from Europe would not be admitted into any port of the United States without first being submitted to disinfection in accordance with the regulations of the Treasury Department. The usual bill of health is issued by the consul, who certifies "that good health appears to be enjoyed in this town and the adjacent country, and that there does not appear to be any suspicion of cholera or plague or contagious distemper therein."

March 25, 1893, we arrived at Naples. While going on shore from the steamer we saw a steamship with the United States flag at the fore, with many people on deck. Believing it to be an emigrant vessel bound for the United States, we went at once to our consul, Mr. J. M. Twells, and there learned that it was the steamship *Chandernager*, of the French Line, and was to sail to-day. (At the consul's office Dr. Irwin, who up to this time had been with me, found a cablegram from Surgeon-General Wyman, directing him to proceed at once to Marseilles, France. A steamer in port bound for Marseilles was just then ready to sail, and Dr. Irwin took passage, leaving me to pursue the itinerary previously arranged.)

Accompanied by Consul Twells, we went on board the *Chandernager* at 10:30 a. m. and found she was to sail at 6 o'clock, taking out 1,140 steerage passengers, most of whom were then on board. There was a commission of the Italian Government on board, consisting of the captain of the port, the surgeon of the port, and an officer of the police. We were informed that the two first officials were appointed respectively by the minister of the marine and the minister of the interior; with them was the ship's surgeon. With Consul Twells we inspected the entire vessel, finding the steerage accommodations very poor, the space allotted to each person being entirely inadequate; a large person could not lie in the common wooden bunk without his sides being in contact with the boards. We were told that the vessel was originally a troop ship, and was afterwards arranged to carry emigrants; the scanty arrangements for ventilating between decks were pointed out to the officials as inadequate, and not in accordance with the standard required by the U. S. Government. With the number of people on board, if the hatches were closed, the air must inevitably become extremely foul.

There were no hospital accommodations. When we asked to see these quarters we were shown a small room which had been partitioned off the steerage. There were no special accommodations for the sick people, except that the bunks are a trifle more roomy.

The water-closets (if such they can be called) were disgustingly filthy. There is no pan or hopper. The whole arrangement consists of a wooden trough without even a board to sit upon; the persons using it are compelled to squat on a shelf, balancing themselves as best they may, having nothing to take hold of for support. At the time of our visit the trough was half filled with excrement; no water passed through the trough to carry it away, and the stench was sickening. Immediately adjacent, divided from the "water-closet" by a thin board partition, was

the ship's bakery, where we saw bakers kneading bread. The cracks in the board partition were wide enough to enable one to see what was going on in either place. In a corner near by there was a pile of garbage thrown on the deck, three or four barrels full, consisting of offal from the cook's galley; this quarter of the vessel was in the most filthy condition. The officers' water-closet on deck, into which we went, was but little better, the apparatus being out of order and extremely filthy. The whole condition seemed to be the usual state of affairs, for the ship's crew were on board lounging about and disengaged. We were told that the baggage had already been fumigated in the ship's hold; but we saw several large boat loads of baggage come on board from the shore, and it was at once lowered into the hold. As there was no place on shore to disinfect the baggage it was evident that quite a proportion of it had not been disinfected even externally.

We remained on board during the inspection of all the emigrants, notwithstanding we were politely requested to retire to the cabin because of the "high wind and fear of rain," but we remained during the inspection, which lasted until 6:30 p. m. The whole "inspection" was a pretense from beginning to end; apparently the only examination was to find whether each person had a vaccine scar, and any mark on the arm between shoulder and wrist was accepted as such and the person passed; when no mark could be found the passenger was vaccinated by the ship's surgeon. As each emigrant approached the surgeon he was required to remove his head covering, and his head was glanced at. We saw one young man told to stand aside because he had alopecia, which he said was the result of a fever, and one man stood aside because he had chronic eczema.

Men with cataracts, with one eye, with corneal opacities, with exophthalmic goitre, syphilitic nodes, tumor of the neck, abscesses on various parts of the body, persons of very old age, some apparently idiotic, being led by more fortunate members of the family, all were passed and permitted to go on. They were a wretchedly abject and poverty-stricken lot of people, with hardly a whole suit of clothes among the entire number. The women, 40 in number, were better dressed and much more respectable in appearance. Among the emigrants we found several who had previously been in America, and who were apparently managing the other emigrants. They could be easily picked out because of their impertinent manner toward the officers of the vessel and to all others with whom they came in contact. Mr. Wickersham, our vice and deputy consul, who was with us, and whose long residence in Italy enables him to speak the language fluently, acted as our interpreter, and we spent nearly the entire time in seeking information among the emigrants. Of the large number whom we requested to sign their names in a book which we had for the purpose, there were but three who were able to do so. In response to the question where they were going, all replied, "to Mulberry street, New York." Most of them said they had relatives living there; some of them said they were going to work on farms which they had been told were located on Mulberry street, New York. They appeared to believe that Mulberry street was some place located in the interior, but where they had no idea, saying that they would be told where to go when they reached New York. Notwithstanding that every passenger had a passport which was scrutinized by the police official on board, and which, according to the law of Italy, is granted to the applicant by the Italian Government only upon a certificate issued to each person by the mayor of the community in which he has lived, which certificate says among other things that the bearer is personally known to the mayor and there is nothing against his character; and on the back of each passport there is printed in the Italian language an extract from the United States laws which provides that no person shall be admitted into the United States who has ever been convicted of a felony, etc. Notwithstanding these facts, there was a squad of policemen sent from police headquarters of the city to arrest and return those who were



endeavoring to escape from the country who had committed crimes with which they had been charged, but not yet tried. Three such persons were arrested and removed in our presence, but each had the passport duly signed.

The whole inspection as conducted at this place is worthless; it does not in any way conform with either the spirit or letter of the United States law, and the emigrants on this ship are not such as would be welcome in any community within the United States.

The baggage is not disinfected, and no attention is paid to the proper sanitation of the vessel.

In view of the facts observed, we requested our consul, Mr. Twells, to call a meeting of all the steamship agents located in Naples to meet at his, the consul's, office on the 29th instant.

March 27, with Consul Twells and Vice-Consul Wickersham, we inspected the North German Lloyd steamship *Kronprinz Frederick Wilhelm*.

The sanitary condition of the vessel was excellent; there was good ventilation; the passengers had slept on board all night and our visit was made at an early hour in the morning before the ports were opened, so that we had an excellent opportunity for judging of the ventilation. There were 700 steerage passengers, generally of a better class than those we had inspected on Saturday. This was said to be due to the fact that the charge for tickets on this line of steamships is 20 francs more than on the French line. The berths are larger and more comfortable, and the whole ship was more roomy; the water-closets had the regulation pans, and a stream of water constantly flowing through them; the sanitary condition of the vessel was beyond criticism. The examination of the emigrants, however, was the same as we have described, and is without value. There was the same rapid look for a vaccine or any other scar on the arm, and a glance at the head for baldness. The blind in one eye, crippled, and diseased, some apparently feeble-minded, were all passed. We made repeated efforts to ascertain whether the emigrants could read or write, and although they appeared to be more intelligent than the last examined, more than half of those could neither read nor write.

The closest inspection was made by the police officials to detect deserters from the army and escaping criminals, of which there were several; all had the usual passport. Baggage was brought on board which had not been disinfected, although we were told all baggage had been fumigated in the hold. While standing on deck we saw two lighters come alongside loaded with baggage brought from the shore, which was taken on board and immediately lowered into the hold. We asked where the baggage came from, but no one knew. Each passenger was provided with a passport which had been obtained upon the certificate made by the mayor of his commune that the bearer was free from any criminal charge, and no reason was known why he could not emigrate.

March 28, in company with our consular officers, we inspected the steamship *Massilia* of the Fabre Line. Upon going on board, the hatches were opened and we were told that the steerage had been fumigated with sulphur for six hours. There were no checks, however, to determine how long the hold had been fumigated; there were a number of lighters alongside, waiting to unload fruits, macaroni, and baggage, which indicated that the shippers ashore had not been informed that they would have to wait before loading the cargo. When the hatches were raised there were not sufficient fumes to prevent looking into the lower hold, where there was some freight, and into which that alongside was immediately placed, of course undisinfected. The *Massilia* has on her deck a disinfecting apparatus in which small parcels of clothing or bedding may be steamed, and which is intended for use in the event of a contagious disease appearing while the vessel is en route.

The vessel was cleanly throughout, the bunks roomy, and space between decks

fairly good; hospital accommodations fair, but they might be improved. There were on board 1,100 emigrants and the examination was the same as heretofore described. We detected one woman with three children, each of whom had tinea capitis and whom we had seen removed from the *Chandernager* because of this disease. She said she was going to join her husband in America. We were desirous of ascertaining how she came on board the *Massilia*, having been so recently removed from the other vessel; her appearance and that of her children indicated extreme poverty, and we did not think it probable that she had purchased new tickets for this line. She soon came forward with her children for examination, and the ship's surgeon refused to pass her; whereupon a lively discussion took place between the surgeon, the agent who sold the tickets, and the Italian officials. Our interpreter informed us that the subagent was insisting that the woman should be permitted to proceed, and for a time it appeared as though his will would dominate the action of the examining board; but after a full half hour's debate, the woman was removed by the agent to some other part of the ship and we saw her no more. On going ashore, however, we made inquiry as to whether the woman with the three children had been taken off the ship, and we were told that she had not.

This circumstance indicates that tickets sold for one line of steamships will be received by other lines. On this ship the subagents who brought groups of passengers with them were quite numerous, moving freely about among the passengers, giving them instructions and going behind the official railings intended to keep back all who had no business at the table. They entered freely into conversation with the port physician and police inspector concerning the passengers. Every appearance indicated that they exerted considerable influence in securing passage through the official barriers for the intending emigrants. The medical examination on this ship did not differ from that observed on the others, and can only be characterized as of no value. We talked with some lads who said they were going to New York City where they were to be engaged as bootblacks. They had already been informed that the places awaited their arrival, but they could not or would not mention the name of the party who had sent for them to come. They were from 14 to 16 years of age and were bright-looking boys, although they could neither read nor write. Many of the emigrants were clad in rags; the men in drawers with no trousers, and they were generally a poverty-stricken set. There were several among them who had previously been to America and we learned that they were engaged in "coaching" those over whom they had oversight, directing them especially to keep away from the Americans, meaning our party, and to answer none of our questions.

One man came up with a passport in his hand, assuming that I was one of the officials to whom it should be presented for inspection. I took the passport, then asked his name. He tried then to get his passport back, saying he wanted to see it a moment. Not being able to look at it he could not give us his name, and he did not do so until after the passport had been opened and he had read the name on the inside. Then he replied very promptly.

As passports are of no use to persons who desire to become citizens of the United States it would be a matter of precaution to ask for this document when each emigrant lands, and the commissioner of immigration should be authorized to stamp in large red letters across the face of the passport the word "canceled." This would prevent the document from being returned and made to do duty a second time, a practice which is not uncommon.

The baggage came on with many of the emigrants, so that it was self-evident that it had not been disinfected or fumigated, as there are no appliances for doing so on the shore. These facts obtained here indicate the falsity of the statements made at Palermo, that baggage was disinfected before going on shipboard. As a matter of fact there is no disinfection of baggage here or in Palermo, and the

fumigation of the ship's hold, which is not done in a proper manner, is completed before the baggage of the emigrant comes on board. In view of the facts the following cablegram was sent to the Surgeon-General of the Marine-Hospital Service March 28, 1893: "Large number of emigrants preparing for America. Arrangement for fumigation or disinfection of baggage inadequate. Condition of affairs demands appointment of medical examiner to supervise disinfection. This is a matter of great importance."

March 29 we held a conference at the office of the U. S. consul with the representatives of the steamship lines. There were present U. S. Consul Twells, Vice-Consul Robert O'Neill Wickersham, and Sig. Luigi Balsamo, representing the French National Line; Mr. Edward Holme, the Anchor Line; Sig. Vincenzo De Luca, the Fabre Line; Mr. Frederick Stolte and Mr. Aselmyer, the North German Lloyd; Sigs. Angelo Orlandi and G. Orzi, the Italian General Navigation Company and Florio Rubattino Line. The object of the meeting was stated to be the consideration of the law recently passed by the U. S. Congress regulating quarantine matters. The law was read section by section and opportunity was given for any person to ask questions relative to the paragraph read, and it was stated to them that if no questions were asked concerning it it would be assumed that all present understood the points mentioned. The agents present were told that in order to comply with the new law, new methods for disinfecting vessels, their cargoes, and the baggage of emigrants must be put into practice; that for the present it must be done under the direction of the consul, or someone to be appointed by him, until such time as the medical inspector who had been designated to do this duty at the port of Naples could reach here; that unless all vessels were fumigated in accordance with the regulations prescribed in the act of February 15, 1893, bills of health would be withheld.

Each section of the law and the regulations made in conformity with it were gone over carefully and the subject thoroughly discussed. Numerous questions were asked and answered, so that the matter might be fully understood by the interrogators. As no systematic method of inspection, disinfection, or examination had hitherto been made at this port, there was much ground to go over.

The methods of inspection and disinfection now in use at Bremen, Rotterdam, and Amsterdam were fully discussed, and the conversation showed that all present understood the subject, and each of the steamship agents promised to make the necessary arrangements at once to comply with the United States law. During the conversation it was stated that it would be wise to require the emigrants to reach Naples five days before they expected to sail so that proper examination and disinfection of the baggage might be made without haste. In response one of the gentlemen said that the Italian Government would not permit the emigrants to remain here for five days before sailing, and that they were required upon arrival to go immediately upon the ship, and the Government would not permit any other arrangement. In response to this statement they were informed that the Government of the United States did not wish to interfere in any manner with the laws governing the Italian people, but that for their own protection our people had passed such laws as they believed to be wise, and any person desiring to become a citizen of the United States must be prepared to obey and respect the laws. Therefore, if the intending emigrant could not comply with such regulations as were made by the U. S. Government it would be necessary for them to stay at home, for under no circumstances would a bill of health be issued to any vessel which had not complied with the laws of the United States. It was further stated that it was a matter of impossibility for a proper medical examination of the emigrants to be made in the time now devoted to it, and the officer assigned to duty here would require the time necessary to do it properly. If local regulations did not permit the emigrants to remain in Naples for the length of time required, it



would be necessary for the steamship companies to adjust the time of arrival of emigrants so that all might be done in a proper manner without infringement of local laws.

March 30 the ship *California*, of the Anchor Line, was inspected throughout and found to be in good sanitary condition; the bunks were made of new lumber, and it was said that they were renewed each trip. They were clean and comfortable, supplied with a mattress, which they say is destroyed at the end of each voyage. The rooms intended for hospitals were partitioned off the steerage, but there were two rooms situated on deck having six beds in each for treating contagious diseases. The water-closets could be improved, but they were clean; they are, however, insufficient in number for a ship carrying from 1,000 to 1,200 people. The ship was clean, but there was a quantity of old woodwork in the steerage which could have been dispensed with to the advantage of both space and air. We measured one of the compartments for the accommodation of steerage passengers; it was 56 feet long, 38 feet wide, and 8 feet high. In this room there were bunks for 140 persons. There were two ventilating flues in the compartment, but they are smaller than required by the United States regulations to supply this number of people with air. The captain, who accompanied us during the examination, evinced an intelligent interest in the subject of disinfecting the ship, and said that he used lime wash and carbolic acid in the steerage, which had been newly coated with this mixture, the odor being apparent; he said that the hold would be fumigated the next morning. He showed us a room in which there were trunks and personal effects of steerage passengers, which we were told were placed there for the purpose of disinfection by steam, but that none of the packages would be opened. He was told such disinfection was useless and did more harm than good, because the uninformed person would presume that any infected clothing in the boxes had been disinfected and would take no further precautions. The cargo which was being rapidly stored in the hold consisted of oranges, lemons, and macaroni.

Although the ship did not sail until the next afternoon there were a large number of emigrants on board like those already described; they were ragged and dirty. All of them carried huge sacks, bundles, and packages. No attempt had been made to find out where the people came from or whether the baggage had been examined or disinfected. As observed on the other ships, the subagent was on hand giving directions as usual. We were accompanied during a part of the inspection by Mr. Holmes, one of the owners of the line, with whom we had an extended conversation on shipboard relative to the subject talked about at the conference of yesterday and as to the method of carrying out the requirements, which were explained as the ship was inspected. The *California* has an apparatus for supplying drinking water to the passengers, which, while it may be economical, can not be commended from a sanitary standpoint. The drinking water is put into a large cask on deck; an iron pipe extends to near the bottom of the cask, and on the outside of the barrel it has a mouthpiece to which the thirsty mortal goes and sucks the water through the tube. This is the only way that drinking water is furnished and everyone must suck the same tube.

The captain said that during the voyage he covers the floors of the steerage with carbolized sawdust. The bunks and the steerage were clean, but the emigrants are crowded, and there is not sufficient ventilation. On this voyage the vessel took about 1,150, nearly all of them coming from Italy or Sicily.

Soon after reaching Naples we had inquired whether rags were shipped from there, and were told that no rags were shipped from that place. On going ashore and landing at an unusual place we found a large quantity of baled rags ready for shipment to England, to which place we afterwards learned all rags go from this port. Mr. Wickersham, who was with us at this time, stated that he resided at

Naples during the cholera epidemics of 1882, 1883, 1884, and 1885, and that on one day during the epidemic of 1882 the number who died from cholera was 1,800; that the outbreak at that time was traced directly and without doubt to rags which had been brought from Egypt; that in consequence of this fact he had succeeded in stopping the shipment of rags into the United States, and from that time to the present no rags had gone directly from here to the United States. Many Italian rags are sent out of the country to England and elsewhere from the port of Leghorn.

April 3 we reported the condition of affairs at Naples to Surg.-Gen. Wyman, covering the details of the examinations at this point, and, at the request of U. S. Consul Twells, drew the form of a circular, which was posted in his office, concerning methods of disinfection, etc., which was as follows:

"Before emigrants are permitted to go on shipboard the vessel must be mechanically clean in every part. No chips, sawdust, straw, loose packing material of any name or description can remain in hold or steerage.

"When mechanically clean the hold and steerage will be disinfected by one of the methods named in the Treasury regulations; this must be done by the U. S. consul, or under his direction, the expense to be charged to the ship. When sulphur fumes are used the hatches must be closed down and sealed and remain closed six hours; the steerage and hold will be measured and the sulphur weighed and ignited under the direction of the consul.

"All emigrants' baggage, if from suspected ports, must be fumigated before stowing away; bundles, boxes, trunks, and all packages or sacks must be opened, the contents removed and spread out on racks, there to remain in sulphur fumes for six hours. The quantity of sulphur to be used for disinfection and fumigation will be 3 pounds of roll sulphur to each 1,000 cubic feet of space. The packages, sacks, and bagging belonging to emigrants which contain clothing must be disinfected in the same manner and at the same time as the contents. The material to be disinfected must not occupy more than 50 per cent of the room used for fumigating. Bedding will not be received on board.

"All emigrants presenting themselves for medical examination must be clean; a dirty person will not be examined, but will be rejected at once.

"Emigrants having a contagious disease of any kind will not be permitted to go on shipboard.

"Suspected criminals will be stopped until they can show that there are no charges against them or that they have never been in a prison or an almshouse."

It was learned that vessels often take on freight at other Mediterranean ports and then come to Naples for emigrants, and that no attention is paid to the cleanliness of the hold or the fumigation of the vessel when they load at other ports. It is impossible to do either properly after the loaded vessel reaches this port.

April 5 Assistant Surg. Young, Marine-Hospital Service, arrived, having been detailed for duty at Naples, and we had a lengthy conversation relative to the situation here. At his request a meeting of the steamship agents was called for the following day, at which he desired us to be present. April 6 we held a conference with the steamship agents at the U. S. consul's office, the consul being present, also Vice-Consul Wickersham and the representatives of the steamship companies hitherto mentioned.

Dr. Young outlined the work which he had been detailed to do concerning the examination of ships and emigrants, and stated clearly the methods he proposed to follow: That for the present, if the ships were found clean and came from non-infected ports and he was satisfied that the freight was not from and had not passed through infected places or been handled by those likely to be infected, he should not require the cargo to be taken out in order that the ship should be disinfected; but that if at any time he should consider such a step necessary he

should require it to be done. He also outlined the method to be followed in the examination of emigrants, saying that he did not think it would be possible for him to make a proper examination on shipboard, and that he could not sign a bill of health for any ship that took emigrants on board which he had not examined in a manner which he considered satisfactory and in accordance with the instructions of the United States law. In answer to a question asked by one of the agents, whether officers of the Italian Government could be present during the examination of the ship or the passengers, Dr. Young replied that any official of the Italian Government or officer of the police would be cordially invited to be present; also, one representative from the line of steamships under examination, the United States officials, and one assistant with himself, and no one else; that he would not consent to have the subagents of the steamship lines present at his examination, and that it would be necessary to have a room into which rejected emigrants could go until he could make a more thorough examination than it was possible to make when they were preparing to go on shipboard. Dr. Young furthermore stated that when it was necessary to disinfect baggage he should have exclusive control of the operation, and that some method must be provided where this could be done under his supervision. The steamship agents asked many questions and discussed the proposed methods freely. Before adjournment each one stated that he would do all in his power to immediately carry out the new regulations.

April 7 we sent a second report to Surg. Gen. Wyman, Marine-Hospital Service, concerning the situation at Naples, and informed him that after the methods of examination and inspection had been provided for at Naples one of the steamship companies, to avoid the inspection, had sent between 500 and 600 emigrants from Naples to Palermo, with directions to put them on board the outgoing steamer at that port; and in the report suggesting the necessity of appointing an inspector at Palermo, as the U. S. vice and deputy consul at that place is the son of one of the owners of the Florio Rubatino Steamship Company and the agent of the Phelps Steamship Company, both lines engaged in carrying emigrants from Italy to the United States; also for the appointment of someone who could assist Dr. Young at Naples, because with the present number of emigrants going from Naples it is impossible for one man to do the work.

As there are a large number of Italian emigrants coming to the United States annually, some of whom do not belong to the desirable class, we took special pains to inquire what safeguards there were which could be made available to prevent the undesirable classes from emigrating to the United States.

We found that according to the laws of Italy every person requesting it may be furnished with a certificate from the mayor of the place where the person lives, which is called "*certificato di buono condoteta*," or a certificate of good conduct. Upon this document there are indorsed all petty offenses, if any exist, which have been committed by the individual named, no matter how slight they may be, even if the offense required but a reprimand from the officials. There is also another certificate which may be obtained from the judicial authorities in the district where the person resides, known as "*certificato di penalita*," which document describes any or all of the graver offenses, if such exist, for which the individual named therein has been tried or punished. These two certificates are required by the officials of the Italian Government from all persons who apply for a situation on what is known as the "civil list," and they must be obtained before anyone can be employed in a Government position. The two documents practically cover the life of the individual, and as there is but very little expense in obtaining them there could be no valid objection raised by an intending emigrant if these two documents were to be demanded by the Government of the United States before the emigrant leaves his country. These certificates apply only to emigrants born in Italy. From a careful investigation of the subject we



were convinced that if these certificates were required it would prevent the emigration of a considerable proportion of those who are not considered desirable emigrants.

While we were in Naples application was made at the consulate by a person having a large quantity of wool for the necessary papers for its shipment to New York. The wool came from Russia and the usual certificates had been refused in Florence, Leghorn, and Genoa. The consular officers at those places had each notified the consul here they had declined to give the necessary certificates and he therefore refused them. He told the parties that if they would make an affidavit that the wool had been produced in a healthy district where no contagious or infectious disease had existed and would then have it properly disinfected in the presence of a consular officer, he would provide him with a certificate and invoice, all of which the owners declined to do, and the wool was not sent from Naples. The following form is used at this consulate:

## CONSULATE OF THE UNITED STATES,

Naples, ———, 189

To ———,

*Health Officer, New York Harbor, N. Y.:*

SIR: I, the undersigned consul of the United States of America at Naples, Italy, personally superintended the disinfection by steam and sulphur fumigation, and was also present at the medical and police inspection of the emigrants on board the steamship ———, which sailed from this port for New York the ———. The work in both departments was done in accordance with the instructions received.

I am, sir, your obedient servant,

\_\_\_\_\_  
*U. S. Consul.*

From Naples we went to Rome and had an interview with Consul-General A. O. Bourn, who informed us that although a good many rags were baled in Rome, none of them were sent direct to the United States, but he had been informed that they are first sent to Leghorn, from which port they are shipped, and investigations here confirmed the statements made by Mr. Bourn. In an interview with U. S. Minister Porter, he said that he had recently been questioned by a member of the Italian cabinet as to the nature of the duties required by the U. S. Government of the medical inspectors whom he had been informed had been sent to Naples and Genoa; stating that the Government of Italy had not been notified by the U. S. Government that medical inspectors had been sent officially to the principal Italian ports; and, as he had been questioned upon the subject, he thought that the American minister might be able to inform him. Mr. Porter said that he had received no official communication from his own Government concerning the duties of the inspectors, but that as soon as he had learned what they were, he would notify the Italian Government.

"From the conversation," said Mr. Porter, "and particularly from the questions which were asked me, I was led to the conclusion that the official mentioned," whose name was not given, "considered that it had been an oversight on the part of the U. S. Government not to inform the Italian Government of its intentions to send an officer of the United States having specific instructions relating to Italian subjects, to remain permanently at Italian ports." Minister Porter said further, that it would have relieved him of considerable embarrassment, and, in his judgment, would have been proper for the Department of State to have notified the Italian officials of this action on the part of the U. S. Government and that the U. S. minister should have been informed, so that he might have been prepared to make answer when questioned upon the subject, which at this time he was unable to do.

It subsequently transpired that one of the owners of an Italian steamship company had called upon the cabinet officer referred to and informed him that a

United States officer, sent by the Government of the United States, was located at Naples, and dictating methods of examining emigrants sailing from that port other than those which are prescribed by the Italian Government, and that the new methods demanded were interfering with and obstructing those prescribed by the laws of Italy, and he desired to know whether this was done by the consent of the Italian Government, and whether it would be continuously permitted. It was this question which led the official mentioned to call upon Minister Porter for information.

April 21 we called upon U. S. Consul J. V. Long, in Florence, who stated that he gave no invoices for the shipment of rags from Florence to the United States, but that many rags were shipped from Leghorn. From Florence large numbers of goat and kid skins are shipped direct to the United States. Upon inquiry as to whether he had positive information that the skins all came from within the area of his consular district, he replied that it was his impression that they did, but he had no positive information upon the subject. Subsequent investigation, however, showed that some of these skins came into Italy from Russia, the ordinary outlet from that country having been closed. There are within this consular district (and most of them in Florence) nine merchants who are engaged in shipping raw goat skins, kid skins, or cattle hair to the United States. Since the 1st day of January, 1893, until the date of our visit there had been sent from Florence 88,000 pounds of skins direct to the United States via Leghorn.

There are no disinfecting establishments here. The consul said that he had told the dealers what the United States regulations were concerning the disinfection of such materials, but that he had no personal knowledge as to the method of disinfection or whether it was done at all; that he relied upon the certificates brought to him by the dealers, of which the following is a copy, and that he merely certified the genuineness of the signatures of the officials who had signed the certificates. Neither he nor his assistants had ever visited the establishments where the skins are packed.

#### FORM OF A BILL OF HEALTH.

##### COMMUNE OF ———, OFFICE OF HYGIENE.

The undersigned Syndic of ———, at the request of ———, does certify that ——— bales marked ———, weighing ——— kilograms, containing ———, to be shipped to ———, via ———, were gathered in the warehouse of the said ———, located in this city, which is entirely free from any contagious or epizootic disease.

Done at the city hall this ———.

\_\_\_\_\_  
The Syndic.

##### THE KINGDOM OF ITALY, CITY OF FLORENCE.

I ———, U. S. consul at Florence, Italy, do hereby certify that the foregoing is the genuine and true signature of ———, the Syndic of ———.

Witness my hand and seal of office at Florence, Italy, this ———.

\_\_\_\_\_  
U. S. Consul.

The investigations made here disclosed the fact that none of the skins or the hair is disinfected, and that no pains are taken to determine where the goods come from: we were told that some of the skins may have come from Russia.

April 28, a report was sent to the Marine-Hospital Bureau concerning the shipments made from Florence, and of the liability that exists for the importation of goods from infected districts, and the necessity for watchfulness in order to prevent their admission into the United States.

May 1, we went to Leghorn, and called upon U. S. Consul R. H. Ford, from whom we learned that the rag business at this place was large; shipments being made direct to the United States, but in much larger quantities to England, and that a great many rags are received at Leghorn from ports on the Mediterranean. Two firms are engaged in shipping rags direct to the United States, Charles Mallenchimi, and Cerri Fellippi & Co.; each of these firms send at least 1,500 tons a year to Philadelphia, and to Springfield, Mass. It is said that these firms select the best rags for the United States trade, which are needed to make the highest grade of writing paper.

The rags which we saw in the warerooms were all white, most of them linen; they said that they sent no colored rags, flax waste, or bagging to the United States, but they use the old bagging to bale up the rags which were not disinfected, although, under the direction of Consul Ford, they now disinfect rags in accordance with the provisions of circular No. 143 of the Treasury Department.

The disinfecting rooms are a part of the warehouses; they are built of heavy masonry, the ceilings being arched; the windows are tight, and when disinfecting is going on inside shutters are closed, thus effectually preventing the escape of the fumes. Rags are disinfected during the night, the doors being opened at 6 a. m.; during the day the rooms are aired and used for sorting, the parties not having sufficient space for disinfecting purposes outside the warehouse; the local health authorities require a certificate from the dealers here, which must be signed by the syndic of the community where the rags are gathered, that no contagious diseases exist at that point. As many of the rags are sent into Italy from other countries, it is impossible for the dealers to know where they were gathered or for them to make truthfully the certificates required. Sometimes the health authorities cause the rags coming from the outside to be disinfected, but there is no general rule concerning the matter, and this is not often done. Most of the rags are shipped to England by the Anchor Line. The consul said that he personally superintended the process of disinfection, visiting the establishments every evening; that he ignited the sulphur, locked the door, and took the key with him, and opened the door on the following morning. The consul has insisted that all rags intended for the United States shall be disinfected when they come into the warehouse and before they are sorted, believing that in this manner a better check can be kept upon the disinfected rags; each bale after disinfection has a lead clamp tag affixed, marked "Disinfected, U. S. consul, Leghorn." We suggested that he should put a seal over the keyhole of the disinfecting chamber when he left at night, to guard against the room being opened during his absence, and that the rags should be spread more thinly upon the racks, which he said should be done at once. With these suggestions carried out the method of disinfection practiced here leaves nothing to be desired. One reason why rags are shipped from Leghorn in such quantities is that they are used to pack the marbles from Carrara, which are shipped from this port, and as something soft must be used for packing, freight on rags is often nominal, for the marble shippers must have them to protect the marble in its finished or unfinished state. The following is the form of certificate in use at this place:

CERTIFICATE OF DISINFECTION.

CONSULATE OF THE UNITED STATES OF AMERICA,  
*Leghorn, Italy.*

I hereby certify that the — bales of old rags marked and numbered as follows: —, and shipped from —, have been, at the request of —, disinfected under my direction in the manner required in process No. 3, as prescribed by Treasury regulations of February 24, 1893, in conformity with the quarantine law of February 15, 1893.

In testimony whereof I have hereunto set my hand and seal of office, at Leghorn, Italy, this — day of —, 1890.



From Florence we went to Venice and called upon the consular officer four separate days within the office hours named on the card upon his door. Although his clerk told us he was in the city, we were unable to find him. From other sources we ascertained that no rags are exported from Venice direct to the United States, and that very little merchandise is sent which is liable to carry infection; there is no emigration from this port. From U. S. Consul J. T. Hartigan, at Trieste, we learned that no rags had been exported direct to the United States since 1891, and that they are not now sent to England. Goatskins and kidskins are shipped to the United States in considerable quantities. They come from Montenegro, Croatia, Servia, and Bosnia; it is said that none come from infected districts, but there is no positive proof that they do not. Upon arrival in Trieste the skins are unbaled for assortment, and are then said to be subjected to a process of disinfection by treatment with "antiputrin," a secret agent. They are also said to be subjected to disinfection with "naphthalin." Latterly Consul Hartigan has required a certificate from the port physician to the effect that these goods have been disinfected by spraying with a solution of carbolic acid. No wool or hair is exported direct to the United States. Certificates of origin are now required to accompany merchandise coming from the interior, and goods coming from suspected places are either returned or burned; but officials are so anxious to suppress all news of cholera in their respective localities that such certificates are not always to be relied upon.

The skins are gathered in the interior by small purchasers and are sold to merchants at one of the larger places, to be forwarded to wholesale dealers. The certificates from the larger dealers are worthless, because it is impossible for them to know where the skins are gathered, their certificates merely showing that no cholera exists at that place. But the disease may exist in the country where the skins are produced and the merchant be ignorant of the fact. In any event it is not in his interest to scrutinize the matter too closely, thus injuring his own trade. As a rule the skins are pushed on toward the port as rapidly as possible. Consul Hartigan gives this matter his personal attention, being anxious to prevent the introduction of contagion into the United States. The authorities of Trieste are very much alarmed concerning the health of the city and are doing what they can to make the place clean.

The system of sewerage is poor and many parts of the city unclean, and under favoring circumstances might become centers for the development or spread of epidemics.

There is no emigration at present from Trieste to the United States.

May 11, we reached Milan and remained one day, during which time we found that the rags gathered in and about this place are sent to local paper and shoddy mills, but few being exported; none go direct to the United States. From Milan the route via St. Gothard was followed toward Basle, a road over which large numbers of emigrants travel. It was in an emigrant train upon this road that several persons were taken ill and were put off at a small village. The disease proved to be cholera, but it could not be determined from what place the people came or their destination. It was known, however, that they were emigrants. The disease spread to the villages and there were many deaths. The cholera limited itself to this community, which was in an isolated position among the mountains.

On the 13th we reached Lucerne. From this place rags are sent to local dealers; they do not go direct to the United States. May 15 we arrived at Basle, at which point a number of railroads converge, bringing emigrants from all points, and where there is an agency devoted especially to forwarding emigrants to the United States. It is from this place also that the Compagnie Générale Transatlantique arranges for the transportation of emigrants, and competition is active among the steamship companies for steerage passengers over their respective lines.

The French line has its own special emigrant trains which run from Basle to

Havre by way of the Jura Simplon Railroad, in Switzerland, and the Chemin de Fer de l'Est, in France. The emigrants are mainly forwarded by the agency "Zwilchenbart" and are provided with through tickets to New York, if their destination is in the United States. The emigrants reach Basle from all parts of the Continent, wherever the agency "Zwilchenbart" has subagencies; and they are scattered throughout Europe. This agency makes a special point of securing emigrants from Switzerland, in which country may be seen at various places large advertisements covering the sides of buildings setting forth the advantages possessed by this agency to provide for intending emigrants; also, the superior conditions which exist in the United States for emigrants going to that country. This is the only country in which we saw notices inciting emigration. Although diligently sought for we saw no posters, handbills, or other notifications appealing to emigrants; and at the several steamship agencies visited we found their handbills contained nothing more than the sailing dates of their steamers and the rates of fare.

In Italy, however, the subagents of the steamship companies go into the cities and villages and personally incite emigration, by depicting to the ignorant people the great advantages which there are for them in America, no doubt inducing a large number of those who come to leave their homes. Arrangements are made, for all those who propose to emigrate, to meet this subagent at a time and place agreed upon, and he personally conducts the party on board the steamer, receiving a commission from the steamship company for each ticket sold.

May 16 we reached Paris, and visited the U. S. consulate. The consul-general not being present, we could obtain no information about the invoices of rags sent from the consulate, but learned that no rags are now shipped from Paris direct, excepting "new cuttings," which are sent without being disinfected, under the ruling of the Treasury Department. Relative to the methods employed in collecting and disposing of the rags in this city, mention is made in another part of this report. From the sous-chef of the Compagnie Générale Transatlantique, M. Eugene Boncardi, we learned that the company has a monopoly of the steerage passenger business from France. The port to which they send their passengers is Havre. The emigrants are chiefly Italian and Swiss, though there are some from the Scandinavian countries, and occasionally from Russia, but of the better class. The company employs upwards of 50 general agents and over 300 subagents. M. Boncardi said this company was the only one in Europe which owns and operates special emigrant cars, similar to those used for the same purpose in the United States. They take charge of the emigrants on the frontier of France (generally at Basle), and from there transport them to their steamer and through to New York. He said that the rates charged by the French line were higher than rates on other lines, and this circumstance enabled them to secure a superior class of emigrants; that it was their intention to keep emigrants in the city of Havre as short a time as possible, aiming to have them reach there in good time to get on board outgoing steamers.

While in Paris we endeavored to ascertain from the "Bureau of Hygiene" some information concerning the existence of cholera in France. We had previously requested Vice-Consul General Hooper to get such information as we wanted, but my request was respectfully declined on the ground that he had himself attempted to get this information several times but had always been rebuffed, and he did not wish to repeat the experiment. In attempting to secure the information ourselves, we found the official attitude of those who could give information concerning the disease anything but diplomatic. The officials were notified that we were commissioners from the United States; that the information requested was to be used purely in an official report and for no other purpose, but answers to the most courteous questions were evaded, or answered with irritability, not to say discourtesy,

and on one occasion we were told flatly that it was useless to ask any questions on the subject, for they would not be answered. Failing to obtain the desired information from the health officers, and thrown upon our own resources, we obtained the information requested from a gentleman holding an official position which gave him access to the official records, whose name is withheld at his own request. The authority, however, is of the highest character and perfectly reliable. My informant stated that cholera was known to exist in the provinces of Bouches du Rhone, Morbihan, Gard, L'Hérault, Var, Aude, Rhone, and L'Orient. It was epidemic in but two provinces, that of Bouches du Rhone and L'Orient, but there were a sufficient number of cases in other provinces to make the situation appear grave. We were informed that in Marseilles, where the French officials persistently denied the existence of the disease in an epidemic form, that it was at that time severe in the Italian quarter of the city, the people affected being among the lowest and filthiest. It had come to the knowledge of the gentleman who gave me the information that during the earlier part of June there were as many as 14 cases reported daily; this was on June 6, and there was no abatement of the disease for some days thereafter. The disease in this section of the city was so severe that the Italians left for their own country; at the frontier strict quarantine regulations prevailed, and bedding, dirty linen, etc., were seized and burned on the spot; everything else being subjected to disinfection to prevent the disease from entering Italy.

At Havre we found a number of emigrants awaiting the outgoing steamer, and, as we had been informed, they appeared to be of a superior class. They were from the northern part of Italy and Switzerland, and the majority had secured transportation for the Western States. Some were going to California, and nearly all expected to till the soil.

The boarding houses in Havre, where emigrants await the arrival of the steamer, are inferior. They are generally located in a poor part of the city, are untidy, overcrowded, and unsuitable places. There appeared to be no official oversight, each house being operated as its proprietor thought best. There is room for great improvement in these establishments, for sanitary laws are defied.

There is no proper place for disinfecting baggage or merchandise, and it is not done. The rags gathered about here and sent to the city are not disinfected. Some of them are used in the paper mills in France and some are sold to the person "who pays the highest price for them." We afterwards learned that they go to England. From this place we returned to London, and on June 2 visited the rag establishment of Mr. Robert Hough, London Wharf. Mr. Hough and Mr. Cohen are the largest rag exporters to the United States in the city. Mr. Hough informed me that he received rags from many places in Europe, but the English Government now required that rags coming from the Continent should be disinfected unless they are landed for export, in which case they are permitted to lie upon the docks for seventy-two hours. At the end of that time they must be disinfected or destroyed. He said there had been considerable discussion as to the best means of disinfecting rags. The officials of the British Government do not like the sulphur process, and it has finally been decided that a steam disinfecting apparatus made by Manlove, Alliott & Co. should be used. Mr. Hough said that the machines here and in Hull were the only ones in use in England that he knew of. The machine which we saw is an oval chamber made of boiler iron, about 6 feet high, 3 feet 10 inches wide, and about 8 feet long. It has a double shell, the space between the inner and outer plate being about 2 inches. The boiler iron of the inner and outer shells is riveted together after the manner of a steam boiler. One end of the chamber opens the entire size of the oval, and is large enough to admit one bale of packed rags. The British Government demands that the bale must be put in and disinfected without opening, because to open it would expose the workmen to



any infection contained. After the bale is in the chamber the front door is fastened hermetically and steam at high pressure is admitted into the shell. When the proper temperature has been reached, which is indicated by a steam dial outside (usually 230° F.), the air is exhausted from the chamber where the rags are placed, so that the bale is in a vacuum; when the vacuum is effected, which is also indicated by an appropriate dial, dry steam is admitted into the chamber, and Mr. Hough said that he had seen a self-registering thermometer which had been previously packed in the center of the bale, and which was removed after the bale was taken out, register 220° F.

The apparatus, he said, worked very satisfactorily, and meets with the approval of the Government inspector; he stated that the bales are permitted to remain in the apparatus from ten to fifteen minutes; but it required at least twenty minutes to maneuver and disinfect each bale. All rags which he exports to the United States he said were opened, as required by the Treasury regulations, and he showed a "cradle" in which the loose rags are placed for disinfection before being put into the chamber; the apparatus was not in use at that time. He also said that rags intended for the United States were allowed to remain in the apparatus for one-half hour, and that after this they were rebaled, and the sanitary inspector, Dr. J. Higham Hill, gives them a certificate to be placed on each bale certifying that it had been disinfected. He said that the doctor was not present to see the process, and their own workmen pasted the certificates upon each bale. In reply to my question whether this method of attaching the certificates had always been the rule he said, "Yes; ever since the Treasury Department circular was issued it has been done in this way." After the certificates are pasted on the bale the proper officer issues an order for the release of the disinfected rags and they can then be taken on shipboard. Mr. Hough said "The cost of disinfection, counting everything, is about 25 shillings (sterling) per bale." He admitted receiving rags at this time from France, and upon my expressing surprise he said: "There is no cholera in France; it is a false alarm; if there has ever been any there it is all gone now, and, in any event, I don't think rags carry disease germs; the present fad for disinfection will not last much longer." In response to inquiries he said they were not sending as many rags to the United States now as they did during the winter and early spring; at that time the buyers rushed in a year's supply, fearing that rags might be shut out in the spring. "During the winter I shipped a great many rags, and that accounts for the lessened sales at this time." He said also, "Some firms do not disinfected rags as required by the Treasury circular, and this is unjust to me, because I have to expend an extra amount of money to comply with the American and British regulations, and those exporters who do not comply with the regulations save this expenditure." He said "there should be some general rule, one way or the other, which all should be compelled to follow." We asked him whether Mr. Cohen, the other exporter, had one of the steam disinfecting machines, and he replied, "No; he relies on the sulphur process." The establishment of Mr. Cohen's is the one we visited in January last and which has been already described (see p. 56).

From experiments in methods of disinfection made under direction of the local Government board, and which were supervised and reported upon by H. F. Parsons, M. D., the following extracts are made:

"A tightly trodden bale of white rags was placed in the machine (described above) for two hours with steam at 15 pounds' pressure in both the casing and the interior, the steam being let off from the interior and reapplied every thirty minutes.

"At the end of two hours a thermometer in the center of the bale registered 170° F.; a thermometer suspended in the machine showed 260° F.

"The experiment was repeated two days later with the same bale and under

the same conditions, except that the pressure of steam was kept constant. At the end of two hours the thermometer in the bale registered 185° F.; that suspended in the machine marked 255° F.

"A full-sized bale of press-packed cotton rags measuring 3 feet 6 inches by 3 feet by 3 feet 2 inches and weighing 5 hundredweight was placed in the machine and exposed for four hours to steam at 15 pounds' pressure, relaxed every half hour, the pressure of steam in the jacket being maintained at 30 pounds. At the end of the four hours a thermometer in the bale registered 258° F.

"As a doubt was raised whether the hole in which the thermometer had been placed was sufficiently plugged to prevent the steam finding its way to the thermometer the experiment was repeated under similar conditions, except that the hole instead of, as in the previous experiment, being stuffed with rags was firmly plugged with a conical wooden plug. After four hours' exposure the thermometer in the bale registered 252° F., that hung up in the machine marking 273° F.

"At the end of three hours, however, in another similar experiment with the same bale the temperature had only reached 160° F., showing that four hours is the minimum length of exposure that will suffice under the conditions to attain a temperature that may be relied on for thorough disinfection."

From these experiments it would appear that the regulations requiring the bales to be opened and the rags spread loosely on racks was essential to secure speedy disinfection by steam heat.

Dr. Parsons' report contains the results of numerous experiments with different kinds of disinfecting apparatus, and it appears that preference is given to the apparatus above described.

After making a careful inspection of the manner in which rags are received and shipped to the United States from the port of London we called on Consul-General Collins and informed him of the results of our observations, and he immediately sent a dispatch to the Treasury Department calling attention to the continued irregularities in the rag business at that place. The investigations made developed the fact that rags are shipped to London from several ports in France upon trading vessels; that they are taken "overside," many of them lying on the docks more than seventy-two hours, which is the limit of time prescribed by the British regulations, and that they are put on board steamers bound for the United States; the rags are not disinfected, either in France or England, and it is impossible to know where they had been gathered.

June 15 we visited at Greenwich Dr. William Collingridge, medical officer of health to the port of London. In speaking of the methods of disinfecting rags he said that the apparatus used by Mr. Hough had been tried under his personal supervision a great many times and had always proved successful when properly managed.

The doctor said that he had caused a thermometer to be built into a bale of rags packed in the usual manner and found that the thermometer registered 235° F. when the bale had been subjected to the steam pressure for twenty-five minutes and the proper vacuum obtained; that in one experiment he had arranged a thermometer in the middle of the bale with an electrical attachment adjusted so that when a temperature of 212° was reached a bell would ring; that it required about thirty minutes to reach this result when the machine was properly managed. The doctor laid considerable emphasis upon this point.

We asked whether the rags used for these experiments had been packed with hydraulic pressure, but he did not know. He said, however, that, in his opinion, rags which were solidly pressed together could not be so readily or quickly disinfected; and when asked if, in his opinion, it would not be better to have all the bales opened for the purpose of steam disinfection, he replied, "It certainly would be much better and surer." The doctor further stated that he hoped disinfection



of some kind would be made compulsory, not only at this, but at all times, and that he should do all in his power to bring this result about, and expressed the hope that the authorities in the United States would insist upon the same thing, because to leave the matter of disinfection to be carried out only at such times as there were epidemics would lead to serious difficulties, and it would take a considerable period of time to start the process properly when it was most needed. Dr. Collingridge said that several outbreaks of smallpox had occurred in England which were traced directly to the introduction of foreign rags; that in investigating the subject he had seen hospital cloths, bandages, poultices, etc., in the bales examined. The only rags over which Dr. Collingridge has supervision are those intended for use in England. At this time they must all be disinfected without opening the bales. To superintend this matter he sends an inspector to the establishment where the rags are to be disinfected, who remains during the entire period of disinfection, and until it is finished. When the rags are released and sent to their destination no certificates of origin are required, and they know only in a general way where the rags come from. The doctor remarked that there were a good many difficulties incident to the proper disinfection of rags, particularly with reference to the supervision of the process, which it was necessary to watch from beginning to end.

Through the courtesy of Dr. Collingridge we are in receipt of the last half-yearly report of the medical officer of health for the port of London, to the local government board, from which the following pertinent remarks are extracted:

"The rag trade as a whole has raised objections to the disinfection of rags, on the grounds that it will injure the fiber and thus lower the value of paper making, etc.

"This view, however, is not shared by experts who have investigated the matter, and it is most probable that the main difficulty will be rather the cost of such treatment than its impracticability, and that if the only alternative be prohibition, disinfection will be found comparatively simple.

"As soon as the order was issued, experiments were made with loosely packed bales of rags and it was clearly demonstrated that about thirty to forty minutes exposure to steam, at a pressure of 20 pounds was sufficient to raise the interior of the bale to a temperature of 240° F., while for hydraulically packed bales a longer period was necessary.

"The great obstacles to the erection of the necessary apparatus are the initial cost and the uncertainty of the duration of the local government board's order. One firm only has actually purchased the machinery and arranged for its erection, at suitable waterside premises; this in all probability will be in working order before the end of January.

"The order clearly states that the expense is to be entirely borne by the consignee or owner of the rags, and the only duty of your medical officer is to furnish the certificates, without which they can not be removed from the custody of the custom-house authorities. But as I have previously pointed out, these orders are intended to deal with the danger of infection from cholera. No doubt there is a certain risk of its importation in rags, consisting of old and filthy clothing, though there is but little if any direct evidence as to this.

"With regard to smallpox, the case is otherwise. Dr. Parsons and other observers have quoted numerous cases where outbreaks of smallpox have occurred at paper factories from the handling and sorting of infected rags.

"Many of the consignments of rags brought into this country are in an indescribably filthy condition, containing insects, blood fæces, and even remains of poultices, and other hospital dressings. It can not be wise to allow such materials to pass into the country without proper treatment, and I would again suggest that it would be simpler and safer instead of having from time to time transient prohibitory regulations which cause serious dislocation of trade and annoyance from their uncertainty, to have a fixed and definite plan of dealing with such goods.



"If all rags other than absolutely new cuttings were required to be disinfected before being admitted, the requisite machinery would quickly be established and practice would rapidly diminish the cost of treatment to its lowest possible point, while there would be no longer any need for special orders in the face of an epidemic. Then the risk of infection not only of cholera but also of smallpox and scarlet fever (the diseases most likely to be conveyed by such materials), if not altogether obviated, would at any rate be greatly diminished.

"This view, your worshipful committee will remember, I have previously urged."

Relative to the probable invasion of cholera this season, Dr. Collingridge said they were keeping a very sharp lookout. They employ a steam launch, which is used to patrol the Thames for the purpose of making visitations to all vessels which come into or lie for any time in the river, so as to keep them under observation, not only when they arrive but afterwards, and he has authority to require that any vessel found in an unsanitary condition shall be immediately removed to a proper place, and there cleansed and fumigated; this applies to all vessels, whether they carry passengers or freight.

June 16 we met the agents of the several steamship companies whose vessels come to London in the office of the consul-general, where a meeting had been called for the purpose of explaining to the agents the regulations made operative by the new quarantine law. The steamship companies here have resented the examinations demanded under the recent law, and in one instance had disregarded explicit instructions given by the consul-general and the vessel left port without a bill of health, although the agent had been warned by the consul-general not to start the ship without having her inspected. At this session the steamship agents spent some time in endeavoring to show that it was impossible to have an inspection made, and that in their opinion it was entirely unnecessary. In response to the request of the consul-general, we told them that the inspection required here was being cheerfully acquiesced in by all the great transatlantic lines, whose officers gave every assistance that the prescribed regulations might be thoroughly carried out; that whether they considered such a measure necessary or not was not the question; the U. S. Government had issued regulations which made the examinations necessary, and in default of proper inspection health certificates would be withheld by the consul. They then asked what sort of inspection would be required, and upon being informed what was being done elsewhere they interposed the most ridiculous objections to its being done here.

Among other things they said that "a steamship would not stand upright if all her cargo was out at the same time, and the only way to keep her in proper position was to lower new cargo into one hold as fast as it was taken out of the other;" that it would be "necessary to have an inspector for each ship, and that he must be on the ship all the time;" that "inspection could not be made at the dock because it would interfere with loading and unloading," etc. They were told that it must be done or the bill of health would be withheld and the vessel returned from the other side without being permitted to unload either passengers or cargo. When they understood that this measure would be insisted upon, they then requested permission to employ a medical inspector of their own choice, agreeing to pay him themselves; they were told this could not be done. They then requested permission to employ as many assistants as they thought necessary, agreeing to pay them a fee which they would determine; they were told that the consul-general would appoint an inspector and as many assistants as might be necessary to properly perform this work. During the interview it was learned that some ships which sail from London stop at Swansea to take on passengers instead of having them come to London; this, they said, would necessitate the appointment of an inspector at that place. From the records of the consular office

it appears that about 22 steamships leave London for ports in the United States every month; some have regular sailing days, others have no fixed date. The docks along the Thames River are very extensive, and it would be impossible for one inspector to do all the work necessary at this port to inspect vessels, emigrants, rags, etc. One of the agents present admitted that rags were shipped from France with other merchandise, and were at once loaded on vessels for the United States unaccompanied by certificates of origin, and without disinfection, going "overside," which means that they are unloaded on the docks in London and kept until the ship is ready to receive them. The subject of inspection and disinfection of ships at this port is in the most unsatisfactory condition; in fact, at the date of our visit there was no inspection at all.

In view of the fact that vessels from French ports where cholera is reported arrive in London almost every day, it would seem imperatively necessary to station forthwith a medical officer detailed for inspection duty in London to supervise the inspection required by the recent law; and accordingly this suggestion was made to the Surgeon-General of the Marine-Hospital Service.<sup>1</sup>

As an evidence of the uneasiness existing in London concerning cholera, the Hon. Mr. Chamberlayne, M. P., on the 16th of June, called the attention of the House of Commons to the epidemic in France, requesting the local government board to report to that house what steps, if any, they had taken to prevent cholera from entering England, and that they make immediate response.

That the apprehension is well founded was clearly demonstrated by my investigations. Traffic from France is unimpeded into England; vessels from Boulogne, Calais, Dieppe, and other French ports reach England daily, laden with vegetables, fruits, butter, eggs, etc., as well as cottons, silks, and other merchandise, and large quantities of rags; curiously enough, English regulations require that rags only must be disinfected; manufactured articles known to come from cities where cholera exists are permitted to enter without restriction or disinfection. Large numbers of rabbitskins are sent into England from the country districts of France, and they are not subjected to disinfection or other quarantine regulations; they come from remote districts, are gathered by small buyers, who forward them to depots where they are baled and sent to England and the United States.

In view of the close commercial relations existing between France and England, and the fact that cholera is extending in France, it would seem all the more important to establish such regulations at those ports in England from which vessels sail for the United States as will insure an enforcement of the new regulations that our own shores may be guarded from the encroachments of this dreaded disease. Since the Marine-Hospital Service has stationed officers at Liverpool and Southampton for the purpose of inspecting emigrants and baggage destined for the United States, we have learned that it is becoming customary for emigrants to go to Hull and Glasgow, where there are no inspectors, and where they take passage on steamships bound for the United States and for Canadian ports. The emigrants at these places when conversing with those whom they have no reason to believe are in any way connected with the U. S. Government say frankly that they are bound for the Western States; to those whom they fear may be connected officially with the Government they say that they are going to settle in Canada. The largest number sail from Hull. It has also been noticed that with the increase of numbers going from Hull or Glasgow there has been a decrease in the numbers sailing from Liverpool and Southampton; at Southampton since the regulations concerning inspection have been in force steerage passengers have fallen off nearly one-half, and a large decrease in numbers has been observed at

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<sup>1</sup> Dr. Fairfax Irwin, Surgeon Marine-Hospital Service, has since been ordered to duty as inspector at the port of London.



the port of Liverpool. Another significant feature is the proportionate increase in the numbers of immigrants arriving on steamers bound for Quebec. It is found that the emigrants, at least so far as those coming from Great Britain are concerned, shun the places where strict inspection and disinfection of baggage is required, and where they are kept under close observation from the time they reach the port until they go on shipboard, and go to those places where they are not required to undergo the methods prescribed, apparently dreading the operation of a compulsory bath and the necessary washing and disinfection of their clothing, preferring to go on board ship where there are no such salutary and wholesome arrangements.

We found that the International Navigation Steamship Company, whose vessels sail from Southampton, receive all their continental emigrants upon arrival in England and conduct them to Blackwall, where they have necessary arrangements to lodge them until sailing day, and where they compel them to cleanse themselves and their clothing, which, if necessary, is disinfected. They are kept under close observation until they are put on a railway train at the "Emigrant's Home," and taken directly alongside the steamer at Southampton, to which they are immediately transferred, and where they undergo medical inspection by an officer of the Marine-Hospital Service. If the same sanitary methods are not required at all the ports of debarkation—which is the case at this time—the emigrants will seek those places where they are permitted to roam about as they please until sailing date, and go on shipboard without observing the wholesome and salutary measures which are required, as, for instance, at Southampton. If strict supervision and sanitary measures are required of one line of steamships it should be required of all; and any measure which does not require equality in treatment of the emigrant would be manifestly unjust.

In conversation with Capt. William G. Randall, commanding the steamship *Paris*, he told us that during the cholera epidemic of last season (1892) he commanded one of the "Red Star" steamships sailing from Antwerp, and that during the prevalence of the cholera he caused all the water used by passengers and crew of his ship to be boiled before it was used, whether for drinking or any other purpose. He said there was no special difficulty in doing this. He also said that during the entire season not one case of diarrhea occurred among the passengers he carried.

During the latter part of our investigations the rag exporters informed us that they were now sending very few rags to the United States, that importations had almost entirely stopped; and the New York agents of the foreign exporters told us the same thing. Desiring to ascertain how many rags were being imported we visited the custom-house, and from the statistics which had been prepared showing the importations for the month of June at the port of New York we found that more than 8,750,000 pounds of rags have been received in New York alone. They came from Belgium, France, Germany, Italy, England, Ireland, and Japan, the largest quantities having been shipped from Germany, Italy, and Japan.

The following tables were obtained from the bureau of statistics showing imports of rags into the United States for the five years ending June 30, 1893, and the countries from which they came.

For the years 1892 and 1893 there is a table showing the imports of rags by months at the ports of New York, Boston, and Charleston. Nearly the entire import of the country came in at those ports.

The table of imports by months shows the great increase in the importation of rags for the six months ending June 30, 1893, over the corresponding period in the preceding year, thus verifying the reports which we sent to the Surgeon-General of the Marine-Hospital Service while investigating this subject abroad. The statistics show that the importations for the six months ending June 30, 1893, exceeded



by 38,189,307 pounds the importations for the corresponding months in 1892. These statistics show also that in 1893 there was a large increase in the quantity of rags imported from Belgium and Germany, although dealers in those countries complained to us of great depression in their trade; and the Levy Brothers' pamphlet (p. 1) already quoted was prepared to show, among other things, "that the trade encountered drawbacks and has suffered great losses by the embargo of the last year." The statistics show that the importations from Germany direct in 1893 exceeded those of any preceding year by nearly 6,000,000 pounds, without taking into account the rags sent from that country to the United States via Belgium, Holland, or England; and a large quantity found exit through those countries, despite the "embargo" complained of.

The importation of rags from Belgium direct to the United States during the year 1893 exceeded by more than 12,500,000 pounds the quantity exported from that country in either of the five years preceding.

The full tables, showing importations and values by years, are herewith appended:



|                                |             |           |             |           |             |           |             |           |             |           |
|--------------------------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|
| Turkey:                        | 6,887,415   | 62,182    | 10,029,905  | 94,433    | 7,698,581   | 75,338    | 6,002,976   | 56,484    | 7,770,665   | 79,067    |
| Egypt:                         | 2,800       | 24        |             |           |             |           |             |           |             |           |
| British possessions, all other | 33,000      | 244       | 18,008      | 133       |             |           | 15,000      | 118       |             |           |
| Mexico:                        | 800         | 12        | 46,253      | 556       |             |           |             |           | 78          | 41        |
| Azores, Madeira, etc           |             |           |             |           |             |           |             |           |             |           |
| Switzerland                    |             |           |             |           | 300         | 3         | 500         | 5         |             |           |
| Central America, Honduras      |             |           |             |           |             |           |             |           |             |           |
| Total.....                     | 142,738,858 | 2,552,858 | 149,101,331 | 2,530,611 | 121,058,212 | 2,059,447 | 117,932,075 | 1,798,139 | 160,738,690 | 2,724,734 |



*Imports of rags for paper stock into the customs districts of New York and Boston and Charlestown (by months) during the years ending June 30, 1892 and 1893.*

| Months.               | Rags for paper stock imported into— |           |                             |           |
|-----------------------|-------------------------------------|-----------|-----------------------------|-----------|
|                       | New York.                           |           | Boston and Charles-town.    |           |
|                       | Quantity.                           | Value.    | Quantity.                   | Value.    |
| <b>1891.</b>          |                                     |           |                             |           |
| July .....            | <i>Pounds.</i><br>3,145,094         | \$49,966  | <i>Pounds.</i><br>5,641,864 | \$82,464  |
| August .....          | 5,231,980                           | 87,679    | 4,823,336                   | 67,321    |
| September .....       | 3,361,134                           | 57,688    | 4,463,030                   | 69,455    |
| October .....         | 4,501,356                           | 78,990    | 3,048,111                   | 42,181    |
| November .....        | 4,868,776                           | 77,670    | 5,661,627                   | 82,917    |
| December .....        | 1,562,122                           | 28,434    | 5,709,989                   | 82,332    |
| <b>1892.</b>          |                                     |           |                             |           |
| January .....         | 4,940,202                           | 87,235    | 6,273,336                   | 85,794    |
| February .....        | 5,097,924                           | 78,589    | 4,178,429                   | 57,084    |
| March .....           | 9,113,110                           | 117,719   | 2,584,017                   | 36,847    |
| April .....           | 2,686,493                           | 46,733    | 3,982,853                   | 54,732    |
| May .....             | 2,949,294                           | 74,649    | 5,032,229                   | 70,672    |
| June .....            | 3,443,554                           | 65,172    | 4,514,362                   | 62,869    |
| Total 12 months ..... | 50,901,039                          | 850,524   | 55,852,683                  | 794,666   |
| <b>1892.</b>          |                                     |           |                             |           |
| July .....            | 2,517,991                           | 38,275    | 4,973,276                   | 71,864    |
| August .....          | 3,998,387                           | 80,434    | 5,529,743                   | 82,266    |
| September .....       | 6,199,045                           | 87,788    | 7,241,111                   | 83,215    |
| October .....         | 2,656,191                           | 30,517    | 4,568,297                   | 65,702    |
| November .....        | 932,576                             | 20,110    | 5,134,591                   | 86,318    |
| December .....        | 4,939,566                           | 139,994   | 8,732,383                   | 151,532   |
| <b>1893.</b>          |                                     |           |                             |           |
| January .....         | 5,277,261                           | 114,596   | 8,767,397                   | 135,180   |
| February .....        | 5,832,616                           | 74,381    | 2,689,815                   | 45,164    |
| March .....           | 12,691,937                          | 257,616   | 7,799,541                   | 129,327   |
| April .....           | 12,139,557                          | 227,762   | 12,927,443                  | 216,105   |
| May .....             | 13,027,268                          | 243,620   | 1,900,720                   | 37,364    |
| June .....            | 8,636,946                           | 155,687   | 1,354,610                   | 27,718    |
| Total 12 months ..... | 78,789,341                          | 1,470,780 | 71,618,927                  | 1,131,755 |

#### DO RAGS CARRY DISEASE GERMS?

During the investigations the following question was asked of the proprietor or agent at every rag establishment visited: "Do you know of any case of contagious disease of any kind or a case of sore finger (anthrax) which has occurred among your employes?"

With very few exceptions the replies were in substance: "No. We have never known or heard of a case of contagious disease or of sore finger occurring among our work people."

The unanimity with which the answer was made naturally excited curiosity, especially as one of the commissioners (Dr. Kempster) was personally cognizant of two epidemics of smallpox which first appeared among rag sorters employed at a paper mill, and the origin of the disease was traced directly to the rags.

It was therefore determined to make such investigations as were necessary to ascertain the facts. The following table gives in condensed form the result of these investigations, but as the subject is one of great importance we have thought it proper to give also a brief statement of the several attacks of disease mentioned, and the sources of information:

## SMALLPOX.

| Locality.  | Date.      | Authority.         | Publication.  | Origin.           | Cases. | Deaths. | Remarks.   |
|--|------------|--------------------|---|-------------------|--------|---------|--|
| Thetford, England                                  | July, 1864 | Dr. J. S. Bristowe | Eighth Report Medical Officer of Privy Council.       | Rags              | 32     | 17      | 7 epidemics, same place.                                 |
| Godalming, England                                 |            | do                 | do  | do                |        |         | 2 epidemics.   |
| High Wycombe, England (Rye mills).                 |            | do                 | do  | do                |        |         | 3 epidemics.   |
| Tunbridge, England (Hampton mills).                |            | do                 | do  | do                |        |         |  |
| Tunbridge, England (Basted mills).                 |            | do                 | do  | do                |        |         |  |
| Guildford, England (Chilworth mills).              |            | do                 | do  | do                |        |         |  |
| Liphook, England (Stanford mill).                  |            | do                 | do  | do                |        |         |  |
| Wells, England (Wokey mill).                       |            | do                 | do  | do                |        |         |  |
| Slough, England (Poyle mill).                      |            | do                 | do  | do                |        |         |  |
| Slough, England (mill not named).                  |            | do                 | do  | do                |        |         |  |
| Marlow, England (Temple mill).                     |            | do                 | do  | do                |        |         |  |
| Marlow, England (not named).                       |            | do                 | do  | do                |        |         |  |
| Ivy Bridge, S. Devon, England (Allen paper mills). | Dec., 1886 | Dr. Parsons.       | Report Medical Officer, Local Government Board, 1886. | Soiled linen rags | 5      |         | Following outbreaks, same cause and place.               |
| Do   | 1881       | do                 | do  | Rags              |        |         | Do.  |
| Do   | 1883       | do                 | do  | do                |        |         | Do.  |
| Do   | Feb., 1884 | do                 | do  | do                |        |         | Do.  |
| Do   | Apr., 1884 | do                 | do  | do                |        |         | Do.  |
| Iping, England (blotting-paper mill).              | May, 1882  | do                 | do  | do                |        |         | 2 epidemics.   |
| Do   | May, 1883  | do                 | do  | do                |        |         | Disease spread from this mill to three sep ate villages. |
| Exeter, England (Hele paper mill).                 | Aug., 1883 | do                 | do  | do                |        |         |  |
| Woburn, England (Bricks)                           | Mar., 1885 | do                 | do  | do                |        |         |  |
| Woburn, England (another mill).                    | Feb., 1885 | do                 | do  | do                |        |         |  |
| Woburn, England (Glory mill)                       | Mar., 1886 | do                 | do  | White linen rags  |        |         |  |
| Do   | 1886       | do                 | do  | Rags              |        |         |  |
| Hollington, England.                               | 1883       | do                 | do  | do                |        |         |  |
| Maldstone, England                                 | 1882       | do                 | do  | do                |        |         |  |
| Do   | 1883       | do                 | do  | do                |        |         |  |
| Do   | 1885       | do                 | do  | do                |        |         |  |
| Derby, England (paper mill)                        | 1882       | do                 | do  | do                |        |         | Same mill and room.                                      |

## SMALLPOX—Continued.

| Locality.                                | Date.        | Authority.           | Publication.   | Origin.                         | Cases. | Deaths. | Remarks.   |
|--|--------------|----------------------|--|---------------------------------|--------|---------|--|
| Wakefield, England                       | 1881         | Dr. Parsons          | Report Medical Officer, Local Government Board, 1886.              | Rags                            |        |         | Dr. Ruysch also reports epidemics of that date and place.                        |
| Kent, England (East Malling paper mill). | 1884         | do                   | do   | do                              |        |         |  |
| Do                                       | 1885         | do                   | do   | do                              |        |         |  |
| Do                                       | 1886         | do                   | do   | Superior quality of rags.       |        |         |  |
| Ipswich, England.                        | 1882         | do                   | do   | Rags in stock more than 1 year. | 25     |         | This and following two distinct outbreaks, but victims all working on same rags. |
| St. Mary Craig, England (paper mill).    | 1881         | do                   | Eleventh Report, Medical Officer, Local Government Board, 1881-82. |                                 |        |         |  |
| Do                                       | May 1881     | do                   | do   | Rags                            | 13     |         |  |
| Oakworth, England (Turkey mill).         | June 9, 1881 | do                   | Report Medical Officer, Local Government Board, 1886.              | do                              |        |         |  |
| Hollywell, England.                      |              | do                   | Eleventh Report, Medical Officer, Local Government Board.          | Best white quality rags.        |        |         |  |
| Hollywell, England (Greenfield mill).    |              | do                   | do   | Rags                            |        |         |  |
| Shaftsbury, England.                     |              | do                   | do   | Clean white linen rags.         | 34     |         |  |
| Maldstone, England.                      | 1881         | do                   | do   | Rag store                       |        |         |  |
| Dunbar, Scotland.                        |              | do                   | London Lancet, Dec. 31, 1881.                                      | Rags                            |        |         |  |
| New Cathcart, Scotland (paper mill).     |              | do                   | British Medical Journal, Jan. 20, 1883.                            |                                 |        |         |  |
| Glasgow, Scotland (paper mill)           |              | Dr. Russell, Glasgow | London Lancet, Apr. 28, 1883                                       | do                              |        |         |  |
| Penicuik, Scotland.                      |              |                      | British Medical Journal, Dec. 19, 1885.                            | do                              | 20     |         | Same mill and room as the preceding.   |
| Do                                       | 1881         |                      | do   | do                              |        |         |  |
| Montrose, Scotland.                      |              |                      | London Lancet, July 23, 1883.                                      | Flax from Russia                | 18     |         |  |
| Do                                       | 1886         |                      | do   | do                              |        |         |  |
| Aberdeen, Scotland (Woodside Rag Works). | 1886         | Dr. Farquarson       | British Medical Journal, May 2, 1885.                              | Rags                            |        |         |  |
| Leeds, England.                          | Apr. 1, 1878 | Joseph Coquereau.    | These pour le Doctorat en Médecine. Paris, 1891.                   | do                              |        |         |  |
| Stroud and Toadmore, England             | 1871         | do                   | do   | do                              |        |         | Widespread epidemic.   |
| Canterbury, England                      | June, 1878   |                      | British Medical Journal, July 3, 1880.                             | do                              |        |         |  |
| Do                                       | 1880         |                      | do   | do                              | 12     |         |  |
| Do                                       | Apr., 1875   |                      | do   | do                              | 13     |         |  |
| Do                                       | 1879         |                      | do   | do                              |        |         |  |



|  |            |  |  |                            |      |   |
|--|------------|--|--|----------------------------|------|---|
| Bradford, England                        | 1879       | Dr. Butterfield                          | Annual Report on Health of Bradford, 1879.   | do.                        | do.  | Several persons in same room in mill, living widely separated, simultaneously taken.      |
| Ossett-cum-Gawthorpe, England.           | Mar., 1878 | do.                                      | do.  | do.                        | 30   |   |
| Whittlesford, England                    | 1873       | do.                                      | do.  | do.                        |      |   |
| Do                                       | 1875       | do.                                      | do.  | do.                        |      |   |
| Taunton District, England                |            | Dr. Henry S. Alford                      | British Medical Journal, June 14, 1880.  | Rags on premises 6 months. |      |   |
| Abenheim, Rhenish Hesse.                 | 1880       |  | British Medical Journal, June 5, 1880.   | Rags.                      |      |   |
| Criel, Department of Oise, France.       | July, 1878 | Dr. Wm. M. Smith                         | Report on Disinfection of Rags (p. 12).  | do.                        | 40   | Spread to 20 communes.  |
| Marseilles, France.                      | 1874       | Dr. Ruysch                               | Report at a Congress of Hygiene, at The Hague, Holland, entitled Rags: A danger, national and international. | do.                        | 1017 | 117 rag shops in the city, 46 rag shops in 1 district; deaths in larger proportion there. |
| Barendrecht, Holland.                    | 1881       | do.                                      | do.  | do.                        |      |   |
| Maestricht, Holland.                     | 1879       | do.                                      | do.  | do.                        |      |   |
| Herde, Holland.                          | 1871       | do.                                      | do.  | do.                        |      |   |
| Epe, Holland.                            | 1871       | do.                                      | do.  | do.                        |      |   |
| Lyons, France.                           |            | do.                                      | do.  | do.                        |      |   |
| Christiana, Norway.                      |            | do.                                      | do.  | do.                        |      |   |
| Leipsic, Germany.                        |            | do.                                      | do.  | do.                        |      |   |
| Osult.                                   |            | do.                                      | do.  | do.                        |      |   |
| Ossett, England.                         | 1880       | Dr. Parsons.                             | Report Medical Officer Local Government Board, 1885.   | do.                        |      |   |
| East Ardsley, England                    |            | do.                                      | do.  | do.                        |      |   |
| Chalford, England.                       | 1875       | do.                                      | do.  | do.                        |      |   |
| Briscombe, England.                      | 1875       | do.                                      | do.  | do.                        |      |   |
| Ghent, Belgium.                          | June, 1880 | U. S. consul, Ghent                      | Dispatch to U. S. Department of State, June 1, 1880.   | do.                        |      |   |
| Do                                       | 1882       | do.                                      | Dispatch to U. S. Department of State, Apr. 8, 1890.   | do.                        | 44   | Writer also refers to previous epidemic; This epidemic lasted many months.                |
| Do                                       | 1882       | do.                                      | Dispatch to U. S. Department of State, June 14, 1882.  | do.                        |      |   |
| Plainwell, Mich.                         |            | Dr. Thompson, health officer, Plainwell. | Report State Board of Health, Michigan, 1882, page 382.  | do.                        |      |   |
| West Springfield, Mass.                  |            |  | Fifth Annual Report Massachusetts State Board of Health, page 548.   | do.                        |      |   |
| West Kent, England.                      |            | Dr. C. O. Baylis                         | Fifth Annual Report Connecticut State Board of Health.   | do.                        | 40   | 3 outbreaks.  |
| Manchester, Conn.                        |            |  | Report, Connecticut State Board of Health, 1883.   | do.                        |      |   |
| Windsor Locks, Conn.                     |            |  | do.  | do.                        |      |   |
| Spring Mills, Pa. (Hamilton Paper Mill). | Apr., 1885 | Dr. Wm. B. Atkinson                      | First Annual Report Pennsylvania State Board of Health, page 218.  | do.                        |      | 2 outbreaks in same year.   |

## SMALLPOX—Continued.

| Locality.                                      | Date.              | Authority.          | Publication.  | Origin.  | Cases. | Deaths. | Remarks.                     |
|--|--------------------|---------------------|---|----------|--------|---------|------------------------------|
| Spring Mills, Pa. (Hamilton Paper Mill).       | Sept., 1885        | Dr. Wm. B. Atkinson | First Annual Report Pennsylvania State Board of Health, page 218.   | Rags     | 34     |         |                              |
| Adams, Mass                                    |                    |                     | Fourth Annual Report Massachusetts State Board of Health, page 408. | do       |        |         |                              |
| Blackstone, Mass.                              |                    |                     | do  | do       | 10     |         |                              |
| Cummington, Mass                               |                    |                     | do  | do       | 19     |         |                              |
| Dighton, Mass                                  |                    |                     | do  | do       | 17     |         |                              |
| Fitchburg, Mass                                |                    |                     | do  | do       | 25     |         |                              |
| South Hadley, Mass                             |                    |                     | do  | do       | 8      |         |                              |
| Holyoke, Mass                                  |                    |                     | do  | do       | 32     |         |                              |
| Huntington, Mass                               |                    |                     | do  | do       | 3      |         |                              |
| Lee, Mass.                                     |                    |                     | do  | do       | 15     |         |                              |
| Montgomery, Mass                               |                    |                     | do  | do       | 6      |         |                              |
| West Boylston, Mass                            |                    |                     | do  | do       | 1      |         |                              |
| West Springfield, Mass                         |                    |                     | do  | do       | 16     |         |                              |
| Dalton, Mass                                   |                    |                     | do  | do       | 6      |         |                              |
| Barnardston, Mass.                             |                    |                     | Third Annual Report Massachusetts State Board of Health.            | do       |        |         |                              |
| Holyoke, Mass                                  |                    |                     | do  | do       |        |         | 38 cases in Holyoke in 1882. |
| Deerfield, Mass                                |                    |                     | do  | do       |        |         |                              |
| Turners Falls, Mass                            |                    |                     | do  | do       |        |         |                              |
| Northampton, Mass                              |                    |                     | do  | do       |        |         |                              |
| Holyoke, Mass. (Holyoke Paper Company's Mill). | Mar., 1887         | Dr. Withington      | Nineteenth Annual Report Massachusetts State Board of Health.       | do       |        |         |                              |
| Huntington, Mass. (Chester Paper Company).     | Apr., 1887         | do                  | do  | do       |        |         |                              |
| Dalton, Mass. (Weston Paper Mill).             | do                 | do                  | do  | New rags |        |         |                              |
| Westfield, Mass                                | May, 1887          | Dr. E. L. Griffin   | do  | Rags     |        |         |                              |
| Neenah, Wis                                    |                    |                     | First Annual Report Wisconsin State Board of Health, 1876.          | do       |        |         |                              |
| Menasha, Wis                                   | Dec., 1876,        | do                  | do  | do       |        |         |                              |
| Do   | to May, 1877.      | Dr. J. R. Barnett   | Second Annual Report Wisconsin State Board of Health, 1877.         | do       | 70     |         |                              |
| Do   | May to Dec., 1877. | do                  | do  | do       |        |         |                              |

|                            |                 |                              |   |         |             |  |
|----------------------------|-----------------|------------------------------|---|---------|-------------|--|
| Neenah, Wis.....           | Nov. 1876-77.   | do.....                      | do.....   | do..... | 20.....     | Dr. Kempster personally knows of 2 other outbreaks occurring at Neenah a year or two later. Some cases appeared to be scarlet fever. |
| Watertown, N. Y.....       |                 | Dr. F. B. A. Lewis.....      | Boston Medical and Surgical Journal, vol. 1, 1875.                      | do..... | 40.....     | 14   |
| Massachusetts.....         |                 |                              | Fifth Annual Report, Massachusetts State Board of Health.               | do..... |             |  |
| Warren Township, Mich..... | Feb.-May, 1877. | Dr. Wm. Symonds.....         | Report Michigan State Board of Health, 1878.                            | do..... | 23.....     |  |
| Ypsilanti, Mich.....       |                 | Dr. E. Batwell.....          | National Board of Health Bulletin, vol. 1, No. 44, May 1, 1880.         | do..... |             |  |
| Massachusetts.....         |                 | Dr. Chas. F. Withington..... | Eighteenth Annual Report, Massachusetts State Board of Health, page 48. | do..... |             |  |
| Germany.....               |                 | Dr. Napias.....              | Manuel d'Hygiene Industriel.  | do..... | 5.....      | At least 33 distinct outbreaks reported.   |
| Do.....                    |                 | Lewy Bros., Berlin.....      | Pamphlet "The danger of cholera from the rag trade."                    | do..... | 1.....      | Replies numbered in pamphlet No. 51.   |
| Do.....                    |                 | do.....                      | do.....   | do..... | 5 or 6..... | Replies numbered in pamphlet No. 52.   |
| Do.....                    |                 | do.....                      | do.....   | do..... | 1.....      | Replies numbered in pamphlet No. 53.   |
| Do.....                    |                 | do.....                      | do.....   | do..... | 28.....     | Replies numbered in pamphlet No. 141.  |
| Do.....                    |                 | do.....                      | do.....   | do..... | 1.....      | Replies numbered in pamphlet No. 142.  |
| Austria.....               |                 | do.....                      | do.....   | do..... |             | Replies numbered in pamphlet No. 236.  |
| Do.....                    |                 | do.....                      | do.....   | do..... |             | Replies numbered in pamphlet No. 24.   |
| Herisau, Switzerland.....  |                 | do.....                      | do.....   | do..... | 6.....      | Replies numbered in pamphlet No. 30.   |
| England.....               |                 | do.....                      | do.....   | do..... | 3.....      | Replies numbered. No. 3.   |
|                            |                 |                              |   | do..... |             | Replies numbered. No. 128.   |

## INFLUENZA.

|                          |      |                         |   |           |         |                            |
|--------------------------|------|-------------------------|---|-----------|---------|----------------------------|
| Germany.....             | 1891 | Lewy Bros., Berlin..... | Pamphlet, Danger of Cholera from the Rag Trade. | Rags..... |         | Replies numbered. No. 54.  |
| Do.....                  |      | do.....                 | do.....   | do.....   |         | Replies numbered. No. 144. |
| Do.....                  |      | do.....                 | do.....   | do.....   |         | Replies numbered. No. 284. |
| Austria.....             |      | do.....                 | do.....   | do.....   |         | (Two epidemics). No. 28.   |
| "Belgium or France"..... |      | do.....                 | do.....   | do.....   | 10..... | No. 100.                   |



## HADERNKRANKHEIT—RAG-SORTERS' DISEASE.

| Locality.                        | Date.       | Authority.                         | Publication.   | Origin.            | Cases.             | Deaths.           | Remarks.                     |
|----------------------------------|-------------|------------------------------------|--|--------------------|--------------------|-------------------|------------------------------|
| Germany.....                     |             | Joseph Coquereau.....              | Thèse pour le Doctorat en Médecine. Paris, 1891.           | Rags.....          |                    |                   |                              |
| Gloggnitz, Austria<br>Ligat..... |             | do.....<br>Dr. Schulz.....         | do.....<br>London, Medical Record, Dec. 15, 1886.          | do.....<br>do..... | 12.....            | 6.....            | 14 deaths in 1 year.         |
| Bradford, England                | Oct., 1890. | Samuel Lodge, jr., M. D.           | Medical Press and Circular, London, Oct. 7, 1891.          | do.....            |                    |                   |                              |
| Styria, Austria                  |             |                                    | Ziessens's Cyclopaedia, vol. 3, page 407.                  | do.....            |                    |                   |                              |
|                                  | 1870        | Dr. Prater.....                    | Sanitary Record of London, July 15, 1887.                  | do.....            | 16.....            | 16.....           |                              |
| Austria.....                     | 1874-1880   | do.....<br>Lewy Bros., Berlin..... | do.....<br>Pamphlet, The Danger of Cholera from Rag Trade. | do.....<br>do..... | 12.....<br>10..... | 12.....<br>1..... | Replies numbered.<br>No. 22. |
| Do.....                          |             | do.....                            | do.....  | do.....            | "A few".....       |                   | Replies numbered.<br>No. 24. |
| Do.....                          |             | do.....                            | do.....  | do.....            | 27.....            | 27.....           | Replies numbered.<br>No. 26. |
| Do.....                          |             | do.....                            | do.....  | do.....            | 2.....             |                   | Replies numbered.<br>No. 27. |
| Do.....                          |             | do.....                            | do.....  | do.....            |                    | "3 or 4".....     | Replies numbered.<br>No. 28. |

## SCARLET FEVER.

| Locality.              | Date. | Authority.            | Publication.  | Origin.                               | Cases. | Deaths. | Remarks.   |
|------------------------|-------|-----------------------|---|---------------------------------------|--------|---------|--|
| Woburn, Bucks, England |       | Dr. Parsons.....      | Report Medical Officer, Local Government Board, 1886. | Rags.....                             |        |         | Victim, a child of a rag sorter.   |
| Bath, England          | 1882  | do.....               | do.....   | do.....                               |        |         | Used as a fertilizer on fields.  |
| East Sussex, England   |       | Joseph Coquereau..... | Thèse pour le Doctorat en Médecine. Paris, 1891.      | Rag-dust "détritus des chiffons"..... |        |         |  |
| ERYSIPELAS.            |       |                       |   |                                       |        |         |  |
| Germany.....           |       | Joseph Coquereau..... | Thèse pour le Doctorat en Médecine. Paris, 1891.      | Rags.....                             |        |         | Dr. Finkelnburg also reports this disease as certainly communicated by rags. |

## TYPHUS FEVER.

|                          |      |                         |  |           |  |
|--------------------------|------|-------------------------|--|-----------|--|
| Morley, England.....     | 1880 | Dr. Parsons.....        | Report Medical Officer, Local Government Board, 1885.  | Rags..... | Typhus fever unknown in this district. |
| Leeds, England.....      | 1880 | do.....                 | Report at Hygienic Congress, The Hague, Holland, entitled Rags: A Danger National and International. | do.....   |  |
| Wormerveer, Holland..... | 1886 | Dr. Ruysch.....         | Famphlet, The Danger of Cholera from the Rag Trade.  | do.....   |  |
| "Belgium or France"..... |      | Lewy Bros., Berlin..... |  |           | Reply numbered, No. 52.                |

## TYPHOID FEVER.

|                    |  |                     |  |           |  |
|--------------------|--|---------------------|--|-----------|--|
| Massachusetts..... |  | Dr. Withington..... | Eighteenth Annual Report, Massachusetts State Board of Health. | Rags..... |  |
|--------------------|--|---------------------|--|-----------|--|

## SEPTICEMIA.

|                         |               |                       |  |               |  |
|-------------------------|---------------|-----------------------|--|---------------|--|
| East Kent, England..... | Apr. 29, 1877 | Joseph Coquereau..... | Thèse pour le Doctorat en Médecine. Paris, 1891. | Rag dust..... | Used rag dust as a fertilizer on soil. |
|-------------------------|---------------|-----------------------|--|---------------|--|

## FLOCK COUGH.

|              |  |                       |  |           |   |
|--------------|--|-----------------------|--|-----------|---|
| Germany..... |  | Joseph Coquereau..... | Thèse pour le Doctorat en Médecine. Paris, 1891. | Rags..... | Found by the commissioners also at Kriesa, Germany. |
|--------------|--|-----------------------|--|-----------|---|

## CHOLERA.

|                                |      |   |   |                             |   |
|--------------------------------|------|---|---|-----------------------------|---|
| Pilburg, Holland.....          | 1886 | Dr. Ruysch.....   | Report at a Congress of Hygiene, The Hague, Holland, entitled Rags: A Danger National and International. New York Medical Journal, Aug. 23, 1886. | Introduced by a rag picker. |   |
| Kriegstetten, Switzerland..... |      | Dr. Geo. M. Sternburg, now Surgeon-General, U. S. Army. |   | Rags.....                   | 11  |
| Eberswalde.....                | 1886 | Lewy Bros., Berlin.....                                 | Famphlet, Danger of Cholera from Rag Trade.   | do.....                     | 10  |
| Malmedy.....                   | 1852 | do.....   |   | do.....                     | 5 Replies numbered, No. 1.<br>"2" Replies numbered, No. 10. |

## CHOLERA—Continued.

| Locality.                  | Date.       | Authority.  | Publication.   | Origin.    | Cases. | Deaths. | Remarks.  |
|----------------------------|-------------|---|--|------------|--------|---------|---|
| Calbe Saale.....           | 1873        | Lewy Bros., Berlin.....                                 | Pamphlet, Danger of Cholera<br>from Rag Trade.                             | Rags ..... | 1      | 1       | Replies numbered.<br>No. 25.                    |
| Berlin .....               | 1866        | do.....   | do.....  | do.....    | 1      | 1       | Replies numbered.<br>No. 27.                    |
| Eberswalde .....           | 1873        | do.....   | do.....  | do.....    | 3      | 2       | Replies numbered.<br>No. 35.                    |
| Glauchau.....              | 1866        | do.....   | do.....  | do.....    | 2      | 2       | Replies numbered.<br>No. 43.                    |
| Koenigsberg .....          | 1866-1873   | do.....   | do.....  | do.....    | 1      | —       | Replies numbered.<br>No. 37.                    |
| Hamburg .....              | 1892        | do.....   | do.....  | do.....    | 1      | 1       | Replies numbered.<br>No. 241.                   |
| Posen.....                 | 1866        | do.....   | do.....  | do.....    | 1      | 1       | Replies numbered.<br>No. 274.                   |
| Arnau .....                | 1852        | do.....   | do.....  | do.....    | 5      | —       | Replies numbered.<br>No. 11.                    |
| St. Petersburg .....       | 1830-1892   | do.....   | do.....  | do.....    | 138    | 22      | Replies numbered.<br>No. 20.                    |
| Saratoff .....             | 1892        | do.....   | do.....  | do.....    | 2      | —       | Replies numbered.<br>No. 46.                    |
| Samara .....               | 1892        | do.....   | do.....  | do.....    | 1      | —       | Replies numbered.<br>No. 47.                    |
| Papiermühle, Germany ..... | Sept., 1893 | Prof. Dr. Doenitz, Ger-<br>many, University of<br>Bonn. | Abstract sanitary reports Oct.<br>6, 1893, U. S. Treasury Depart-<br>ment. | do.....    | 14     | 6       | Epidemic not sup-<br>pressed Sept. 12,<br>1893. |

Total number of epidemics reported, 206; total number of epidemics in the United States, 74.



As long ago as 1865 Dr. J. S. Bristowe was directed by the local government board of England to examine into reported cases of smallpox among employes in paper mills, and in the eighth report of the medical officer of the privy council, 1865, he makes the following statements:

In July, 1864, an epidemic of smallpox commenced in Thetford, which lasted for six or seven months, causing 16 or 17 deaths. There had been no smallpox in the village for some years previously; and the first cases occurred in the persons of two women engaged in sorting and cutting up some foreign rags. The disease appeared in both women on the same day, although they were not living together. The next case at the same place was that of a boy working in the engine room of the mill, but who had been in communication with the rag-workers. Dr. Minn, the surgeon of the parish, gave the information to Dr. Bristowe, and informed him that in all there were 32 cases emanating from the women first taken ill. The same report mentions an epidemic of smallpox at Godalming, and upon investigation Dr. Bristowe learned that there had previously been seven distinct epidemics which originated among the rag sorters and cutters in the mill at that place.

Dr. Bristowe states further that he found two epidemics of smallpox had occurred at different times in the Rye Mill at Highwycombe, each of which originated among the ragworkers of the mill.

In the Hampton Mills at Tunbridge an epidemic of smallpox occurred which originated in the sorting room, caused by infected rags. At the Basted Mills in the same place he found that smallpox had occurred three separate times, originating in the same manner.

At the Chilworth Mill, Guildford, there was an outbreak of smallpox which originated in rags; and at the Stanford Mill, Liphook, an epidemic occurred traced directly to rags used in the mill. At the Wokey Mills, near Wells, Dr. Bristowe reports an outbreak of smallpox traced directly to the rags; and at the Poyle Mills near Slough, there was an epidemic caused by infected rags, the first cases occurring among the sorters. Dr. Bristowe says (mill not mentioned): "Mr. Barnard, upon opening a bag of rags, noticed a disagreeable odor, and fourteen days thereafter was seized with smallpox. He recognized the same odor when the scabs were falling from his body that he had noticed when opening the bag. There were no previous cases of smallpox at the place. A female rag-sorter took smallpox at the Temple Mills, Marlowe; four others had it at the same time, all five being engaged in sorting dirty London rags. There were no previous cases of smallpox in the village." He also reports the case of another rag-sorter who recognized the smell of smallpox in a bale of rags opened at another time, and shortly thereafter she was taken with the disease. There was no smallpox in her neighborhood at the time.

These cases were reported in 1865, before the subject had obtained the importance since given to it. It is valuable, however, for one thing. The record shows that nearly thirty years ago those who had investigated the subject demanded the proper disinfection of rags as a protection to the working people. The same thing is being urged to-day.

In the report of the medical officer of the local government board for 1886, Dr. Parsons, the medical officer, reported an outbreak of smallpox from infected rags at Ivy Bridge, South Devon, at the paper mills of Messrs. Allen at that place. There were no previous cases in the village, and the women first attacked were engaged in the sorting room; the rags were soiled white linen (underclothing, bed linen, handkerchiefs), and three girls working upon these rags were taken simultaneously. There had been, said Dr. Parsons in this report, several other similar outbreaks in the village which had been traced to the same cause, emanating from the same place; one in 1881, another in 1883, in February, 1884, in April, 1884, and

the next, the one of which he then wrote, December, 1886. Each one of the epidemics was reported to him by the local health officer of the district. After careful personal examinations made by them they traced the origin of the disease to the sorting or cutting room of the paper mill located in the town. The disease had not existed there previously. From the same report the following outbreaks are noted: A second epidemic occurred in May, 1882, at the blotting-paper mill of Warren & Co., Iping, Sussex, reported by Dr. Kelley, medical officer of health, West Sussex. Two rag-sorters were taken ill at the same time. They lived some miles apart, but both were sorting from the same bale of rags when taken. There were no other cases of the disease previously existing in that place. Another outbreak occurred in the same mill, reported by the same health officer in May, 1883, six sorters having been taken ill with smallpox between the 7th and 11th of May. There were no previous cases in this part of the country nor in the adjoining territory, but the disease spread from this mill to three separate villages.

In August, 1883, an outbreak of smallpox at Hele paper mill near Exeter was reported by Mr. Dickinson, medical officer of health, 4 cases appearing simultaneously among the sorters who were working on rags from Russia, which they said had an offensive smell; no previous cases in the place.

The next outbreak reported by Dr. Parsons was at Woburn, Bucks, in March, 1885, emanating from the sorting room, the sorters being at work on rags from Russia and Germany; there was no smallpox anywhere about. There was at this same mill one case of malignant scarlet fever. The disease and death were certified as being due to sorting rags in this same room. There were no other cases of smallpox or scarlet fever at that time. At another mill in the same place there was an outbreak of smallpox in February, 1885, the girl first attacked complaining that the smell of rags had made her ill.

Another attack occurred in the Glory Mill, Woburn, in March, 1886, first appearing among girls working in the sorting room. The rags were white linen, not particularly dirty. The first cases taken were working at separate tables, but on the same rags. In April, 1886, another outbreak occurred in the same mill among the rag-sorters, all evidences of the previous outbreak having ceased to exist some time before. The next outbreak reported occurred at the paper mill in Hollingbourn in 1883 among the sorters in the mill. The smallpox was traced to some rags received from Russia; no previous smallpox in the place.

The next cases reported by Dr. Parsons occurred at Maidstone, the facts being communicated by Mr. Adams, health officer; the outbreak occurring among the rag-cutters in that place in 1882, and he reported similar outbreaks in the same room in the same place in 1883 and in 1885. In one of these outbreaks eight girl sorters were taken with the disease in three days, and a few days later three more women in another room, to which the same rags had been carried, were taken with the same disease. He said the rags were "clean white."

The next outbreak reported was communicated by Mr. Iliffe, medical officer of health of Derby; smallpox breaking out in the paper mill there in 1882; no smallpox previously in the place, and the person had not been away.

In Wakefield rural district Mr. Francis H. Wood and Dr. Wade, of Wakefield, health officers, report the epidemics of smallpox occurring at Wakefield originating at the paper mills among rag workers, in both cotton and woolen rags. The disease first appeared among the rag sorters; no previous cases existing at the time. In April, 1885, Mr. Francis Wood reports an outbreak of smallpox at East Ardsley, originating in a rag mill at that place; the rags were supposed to have come from London.

Dr. Butterfield, health officer of West Kent, reports an outbreak of smallpox in 1885 among the rag sorters at Eastmalling Paper Mills, Kent. Smallpox was contracted among the rag sorters and cutters in this mill on three different occasions,

in 1884, 1885, and 1886. In the last outbreak five women were taken ill; on February 9, while at work upon rags from London which were described as of "superior quality."

In the report of the medical officer of the local government board of 1885 Dr. Parsons states that in 1880 an epidemic of smallpox occurred at Ossett, the first case occurring in a rag sorter, and proved to be the starting point of a local epidemic, the district having been previously free. Mr. Greenwood, medical officer of health at that place, reports other cases produced in the same manner prior to this one; and he also states that the people who work among rags are liable to contract the itch.

Dr. Elliston, medical officer of health, Ipswich, reported to Dr. Parsons an outbreak of smallpox in the winter of 1882 and 1883, which had its origin among the workers in the mill at that place while they were engaged upon white rags.

Mr. Harper, medical officer of health, Bath, reported in 1882 an outbreak of scarlet fever raging there that year, the first case attacked being a child whose father was employed in the paper mill at that place; no previous cases in the district.

Dr. Parsons describes an outbreak of smallpox in April, 1881, at St. Mary Cray paper mills, where there were 25 cases between April 16 and April 23, all sorters at work on rags which had been in stock for more than twelve months. There were 13 more cases subsequently (in May, 1881), 38 cases in all; and all worked upon the same rags.

Another outbreak occurred at Turkey Mill, Oakworth urban sanitary district, June 9, 1881, occurring among rag sorters working upon "foreign rags;" no previous cases in the district.

At the paper mills at Hollywell rural sanitary district an outbreak of smallpox occurred among girls employed sorting rags, "best white quality;" no previous cases.

At another mill in the same place the same officer of health reports an outbreak of smallpox among the rag sorters in the Greenfield Mills.

The next outbreak reported by Dr. Parsons occurred at Shaftsbury. The first case of smallpox was a woman engaged in sorting rags; the rags were said to have been gathered in places where smallpox was known to exist.

Mr. Adams, medical officer of health at Maidstone, reported an attack of smallpox occurring at that place in 1881, which originated among the girls sorting rags, 11 of whom were taken sick with smallpox at one time; in all there were 34 cases. The rags were "clean, white linen," nothing to show that they came from filthy sources.

Mr. Steel, medical officer of health at Morley, reports to Dr. Parsons a case of typhus fever in 1880, having its origin in infected rags. The man attacked was a rag sorter. At the same time several cases of typhus fever had occurred at Leeds, which were believed to be due to infected rags. These rags were woolen, used in the manufacture of shoddy. Typhus fever is never known in this district.

In the London Lancet, December 31, 1881, an outbreak of smallpox is mentioned as occurring in Dunbar, Scotland. The first case was that of a woman who worked in a "rag store." No previous cases.

The British Medical Journal, January 20, 1883, reports an outbreak of smallpox occurring at a paper mill in New Cathcart, among the rag cutters at that place. The disease was especially virulent. The rags came from Koenigsburg.

In the London Lancet, April 28, 1883, Dr. Russell, of Glasgow, reports an outbreak of smallpox in a paper mill at that place among the rag cutters, and it was entirely limited to them. The disease was traced directly to foreign rags which they were engaged in cutting.

The British Medical Journal, December 19, 1885, reports an outbreak of smallpox at Penicuik, near Edinburgh, a village engaged in paper making. Twenty



cases occurred during the outbreak, the origin of which was traced directly to the rags. The report refers to a similar outbreak in the same place among work people in the same room in 1881.

London *Lancet*, July 22, 1893, reports smallpox introduced into Montrose, Scotland, from Russia, by means of infected Russian flax, the disease first appearing among those who handled the flax. There were 18 cases in all, and the reporter states that a similar attack with regard to its outbreak occurred there seven years before.

In the *British Medical Journal* of May 2, 1885, occurs the following :

"The Woodside rag works at Aberdeen, where the outbreak of smallpox among the workers was the subject of the question by Dr. Farquarson, on April 23, have repeatedly been the scene of outbreaks of smallpox, and it would be worth while therefore that some special inquiry should be made as to the precautions adopted by the proprietors for preventing such occurrences in the future.

"Inquiry as to the outbreaks at Aberdeen was made in the House of Commons, and the lord advocate in response to questions said that investigation showed that smallpox had broken out at these mills on more than one occasion and that the infection had been traced to rags imported from abroad as well as to rags collected in that country."

Dr. Goldie, of Leeds, England, reports an epidemic of smallpox at that place in 1878, commencing among the rag sorters, the first case occurring April 1. Other cases were taken shortly afterwards, all having been engaged on the same rags, and from them the disease spread through the city. Previous to this there had been no cases in the place.

Another epidemic is reported by Dr. Partridge, health officer of Stroud, in 1871, the work people in the establishment at Toadmore being the first affected, and from them the disease became epidemic and widespread.

The same gentleman reports an outbreak of smallpox in 1875, at which time it occurred in two mills, Chalford and Brinscombe, originating from infected rags. The disease assumed a severe form.

The *British Medical Journal*, June 5, 1880, reports as follows:

"An epidemic of smallpox which spread somewhat widely broke out at Abenheim, in the Canton of Worms, Rhenish Hesse. The first patients were five women who worked in a rag factory cutting up and sorting rags. The cases were investigated, and it was found that a portion of these rags came from Marseilles, where smallpox prevailed to a serious extent."

The *British Medical Journal*, July 3, 1880, contains the following:

"It seems to be the commonest of experiences in the existence of smallpox in the city that it should appear in the person of the rag-worker.

"In April, 1875, a girl from the local rag factory was attacked with smallpox and conveyed the infection directly or indirectly to 12 other persons, several of whom died. In June, 1878, there were two cases of smallpox in the city of Canterbury, the second of which caught the disease from a woman who contracted the disease at this factory; and in 1879 another outbreak appeared, the first patient being a rag-sorter at the same mill, who was engaged in sorting very dirty and offensive rags."

Dr. Butterfield, in his annual report on the health of Bradford, wrote:

"No case of smallpox had occurred in the borough for many months, when a girl who had not left the neighborhood was taken sick, and in a few days another young woman employed in the same work, rag-sorting, exhibited the same disease."

Dr. Butterfield reports that "in March, 1878, several persons residing apart, but working in the same room at the same mill at Ossett-cum-Gawthorpe, were simultaneously affected with smallpox, the origin of which was traced to rags which they were engaged in sorting, and from these people it spread to 30 others."

At Whittleford in 1873 and 1875 there were two outbreaks of smallpox occurring among rag-sorters which were traced to rags upon which they were engaged.

The British Medical Journal of June 19, 1880, contains a report made by Dr. Henry S. Alford, health officer of the Taunton district, of an epidemic of smallpox in the town, in which he states that the disease was communicated "by rags that had been on the premises six months and were obtained from Russia or Wales. No cases had occurred in the village nor had the girls first attacked left home. They were sorters in the paper mill living apart. The epidemic appeared at the same time in two places at least 2 miles apart. Investigation showed that the persons in whom the disease first appeared were all employés in the same mill." Dr. Alford says, as a result of his investigation, that the disease originated in the rags at the paper factory, some of them being in a very filthy condition; and he adds: "I have little doubt that in many cases of infectious diseases, especially in those which end fatally, the clothes, soiled, filthy, and poisonous as they are, are sold to the rag dealer without any disinfection whatever, and so become the focus of disease in distant parts of the country or even in distant countries."

Dr. William M. Smith, medical health officer of the port of New York, in a report published by him upon the disinfection of rags, on page 12 states as follows:

"About July, 1878, five sorters of rags working in the warehouse at Criel, France, were attacked with smallpox. They conveyed the disease to their relations and neighbors. Their soiled clothing infected the proprietor and workers in a floating laundry."

The course of the epidemic could be followed from its point of origin to twenty communes. The deaths at Criel, Montataire, and Nogent were 22, and in the arondissement 40. This epidemic was investigated by Dr. Beursier, member of the council of hygiene, and by him ascribed to "the propagation of variolous virus by the rags."

In a work entitled *Thèse pour le Doctorat en Médecine L'Etude de la Des-infection des Chiffon*, by Joseph Coquereau, Paris, 1891, the following cases are reported:

Dr. Frissell, medical officer of health, East Sussex, England, reports the case of a man who was spreading rag dust (*detritus des chiffons*) upon the soil as a fertilizer. This man was attacked by a scarlet fever, there being no such disease in the vicinity and the man had not been away from home.

The same author says that Prof. Finkelnburg made investigations among the rag people employed in the rag business in Germany, and says that "the transmission of erysipelas by rags is beyond question."

The same authority (Joseph Coquereau) relates that Dr. Robinson, medical officer of health, East Kent, England, on April 29, 1877, reported four men attacked by septicemia. They lived at some distance apart, but were engaged in the same work, that of spreading the dust from rags upon the soil. (Rag dust is used as a fertilizer near some of the largest paper-making establishments in Europe.) One of the men told the doctor that he had a habit of scratching the ear which was first affected. All had the usual symptoms of septic fever, one of the men, who was severely attacked, having carried the fertilizer from the station to the ground. In the same report Dr. Coquereau alludes to what he there calls "flock cough" (which we also found at the establishment in Riesa). He describes it as a peculiar cough attacking rag-sorters, characterized by catarrh, chills, dyspnoea, cough, exaggerated sensibility of the thoracic organs. The malady is not fatal, and if work is persisted in may disappear, but if work ceases for a time the symptoms disappear, to return when work is resumed.

The same author says: "Latterly a disease has been described which was found to exist among the rag-sorters in Germany and now known by the name of 'hadern-krankheit,' which has been thoroughly investigated by Dr. Niederfrininger and

Prof. Finkelnburg, of Bonn, and Inspector-General Dr. Nigierka, who reported the conditions found at the congress in Vienna in 1887. The investigations of these physicians show that the disease has peculiar symptoms and that it may be described as an internal anthrax. The disease affects the lungs, producing cedema, and death at the expiration of four days, often after thirty hours; the disease is found only among rag-sorters."

The same thesis quotes the report of Dr. Levy, who described a disease found only among those who were sorting white rags. In one factory in Gloggnitz, Austria, there were 14 deaths from this disease in one year. Autopsy revealed cedema of the lungs, and the symptoms during life all pointed to the lungs as the seat of the disease. The rooms where these rags are torn are full of dust, which makes breathing difficult for the uninitiated. The doctor states that the white rags, being generally remains of sheets, shirts, and garments directly in contact with the skin, are more liable to contain the germs of disease, and consequently render those who handle them more likely to be contaminated by disease germs. Dr. Levy further states that the working people should be warned of the danger of inhaling the dust to which they are exposed, because of the liability to the disease. The sorting room should be thoroughly ventilated, and sleeping, eating, or drinking water should be prohibited in this room. He further insists that the rags must not be kept in damp places, where the germs are liable to thrive, and insists that they should be disinfected in some manner so as to destroy the germs. The views entertained by Dr. Levy are likewise insisted upon by such eminent medical men as Emile Beck and Skvreczka, of Berlin; by Vacher, Wolffhugel, and Quist, of Helsingfors; and Prof. Finkelnburg, of Bonn; Profs. Koch, Pasteur, Tyndall, Richter, and Ruysch.

The London Medical Record, December 15, 1886, prints the following report from Dr. Schultz to the Riega Medical Society:

"May 7, 1886, an outbreak of rag-sorters' disease, 'hadernkrankheit,' appeared in a paper mill in Ligat among women rag-sorters. Five were attacked in one day, and all died. Three days later 7 more were taken with the same disease, and one died."

Dr. Schultz subsequently made an inquiry into the whole circumstance conjointly with Drs. Kranhalls, Heerwagen, and Radecki, and they jointly pronounced the disease "hadernkrankheit," ascribed by Kolb and Frisch to the anthrax contagium and communicated to these women from infected rags. Dr. Kranhalls injected some of the transudation from one of the patients into a rabbit and caused the death of the animal. The cedemafluid taken from the animal was filled with the characteristic bacillus which was found in the patients afflicted with rag-sorters' disease. The cultivation experiments made with this fluid after Hesse's method showed that the microbe obtained was endowed with the same peculiarities in its growth as those described by Hesse. The necropsy corresponded with the descriptions given by Koch, Gaffky, and Hesse, being such as are found in the persons of those dead of rag-sorters' disease. Dr. Kranhalls says that the Koch bacillus of malignant cedema represents the pathogenic microbe of rag-sorters' disease.

In the Medical Press and Circular, London, October 7, 1891, Samuel Lodge, jr., M. D., reports a case of rag-sorters' disease, the broncho-pulmonary form of anthrax (hadernkrankheit) which occurred under his observation, as follows:

"In October, 1890, we had a case of broncho-pulmonary anthrax. The patient was a female rag-picker aged 35, who worked in a rag warehouse in Bradford. Her duty was to tear up old clothes into rags. We were permitted to remove from under her bench as much dust as we wished, and with the assistance of Dr. R. Wurtz, of Paris, the presence of the spores of anthrax in the dust was demonstrated. \* \* \* The bacteriological, historical, and experimental proofs were



altogether decisive and left nothing to be desired. From an intimate knowledge of the condition of warehouses generally we may say that they are usually badly ventilated and lighted, are rarely ever swept or whitewashed, and no precautions are taken as to the ultimate disposal of the dust, or as to the washing of the hands before meals, or eating in the workroom."

He says, further, that the rag merchant before being permitted to store the rags "should procure a certificate from a disinfecting official that the rags have been in a steam pressure disinfector, at a temperature of at least 120° C. Before tearing up the rags they should be moistened and then torn over a trellis hurdle, connected with some apparatus to carry away the dust from the table, and this should be burned at once."

In Ziemssen's *Cyclopædia*, vol. 3, page 407, is the following:

"Kolb reports several cases of inoculation of anthrax by means of rags which were used in a paper factory in Styria. Among the 30 to 35 hands of a paper factory, Dokahl during the course of four or five years, treated 11 cases of malignant pustule due to the above cause and terminating fatally in from forty to forty-two hours."

The Sanitary Record, of London, July 15, 1887, contains the following, relating to rag-sorters' disease or *hadernkrankheit*:

"Dr. Prater observed 16 cases of this disease in 1870, 12 more in 1874 to 1880, making a total of 30 cases, every one of which was rapidly fatal. It attacked only the women who were sorting rags and did not affect the others. An official report prepared concerning this disease says that this peculiar disease has previously been observed, but has been mistaken for pernicious pneumonia or some other affection of the respiratory organs. This is the same disease observed by Dr. Kranhalls, of Riga, in 1886. The report ends thus: 'Only the most stringent sanitary measures can prevent the outbreak of this almost in every case fatal disease. The sterilization of the rags by powerful disinfecting apparatus will prove to be the most efficient preventive.'"

In this connection it may be well to quote from a statement made in the *Dictionnaire Encyclopédique des Sciences Medicales*, vol. 16, page 29:

"The great number of cases of phthisis among the rag sorters and pickers of Paris admitted to the hospital as compared with the number seeking admission from among other persons of the same social grade, but having some other occupation, has long been noted; and the large proportion of deaths from lung difficulties among rag-pickers has also been remarked."

In the same volume Dr. E. Beaugrane mentions the observations of M. Oliver made among rag-pickers, saying that they had a form of disease characteristic, and producing alarming symptoms, which he sums up as indicating "a veritable intoxication of putrid matter producing severe types of disease."

In the *Annales d'Hygiene Publique*, 1879, vol. 2, page 480, may be found some of the symptoms of *hadernkrankheit*, as follows:

"The disease commences with weakness, anorexia, insomnia, vomiting, sensation of weight in the epigastrium, and on the second day, sometimes the third, one can see cyanosis of the lips, cheeks, and nails; cold sweats, oedema of the lungs, no disturbance of the brain. Generally death is easy, excepting in cases where there is pulmonary stasis; no abdominal symptoms and very rarely albumen in the urine.

"Unless careful, even critical examination is made of patients suffering from this form of disease, it might easily be mistaken for an attack of malignant pneumonia or pneumonia with typhoid symptoms, a disease to which rag-sorters are liable and which, until these investigations were made, was described and classified as pneumonia."

Dr. Ruysch, of The Hague, one of the foremost European sanitarians, made a

report at the Congress of Hygiene at The Hague, in 1884, upon "Rags, a danger, national and international," from which the following extracts are made:

"Dr. Gibert's report on the epidemic of smallpox at Marseilles proves conclusively the great influence of rags on epidemics. In 1874 there were 117 rag establishments in Marseilles, of which 46 were in one district; in that district the number of dead from smallpox being three times larger than in any other. There were in all 1,017 cases of smallpox, and by far the larger proportion occurred in the rag-pickers' district."

He further states (in *Revue d'Hygiene*, July, 1879, page 596) "that smallpox and other infectious diseases have frequently been caused in Marseilles by the rag trade, inland and foreign, and by the sale of garments used by the sick."

In 1881 infected rags sent from Gouda caused an epidemic of smallpox at Barendrecht, Holland.

The origin of the smallpox epidemic in 1871 at Herde and Epe, Holland, the medical inspector attributed to rags. In 1886 a number of people who had been handling rags in a paper mill at Wormerveer were attacked with typhus fever.

An epidemic of smallpox in 1879 at Maestricht started among men who were working upon rags which came from Liege, where smallpox was epidemic at the time, there being no cases in Maestricht.

Similar reports on the propagation of smallpox by means of rags have been made concerning factories at Lyons, Christiana, Leipsic, and Osult. In the *Sentinelle de la Sante*, published in Leipsic, Dr. Oidtmann, reported, in 1887, that rags introduced into neighborhoods which came under his observation and which he investigated were the direct cause of epidemics of smallpox in those localities, and that by reason of the frequency of this disease from this cause he demands that old clothing and rags should be submitted to a very careful disinfection in order that disease germs may be destroyed.

Dr. Devillees, physician in chief to the railway companies of France, states that it has been his duty on several occasions to call the attention of the railroad companies to the dangers which result to the employes of the road through handling rags, which have on several occasions caused attacks of various contagious diseases.

"Recently, again, four employes have been attacked by eruptive diseases of a serious character contracted by handling bales of rags which they loaded on the cars; in one the disease resembled urticaria, eczema in another, and measles in the last two, and it has been the cause of an interruption of their labor for a period of from five to ten days, as well as subjecting them to the dangers of the disease. These diseases would not have taken place if the rags had been previously disinfected in a proper manner and properly packed."

It has never been satisfactorily determined how long the contagion of smallpox may be retained in old rags or cast-off clothing. The cases of smallpox that developed in 1873 in the hospital at Utrecht were traced to insufficiently disinfected bedquilts which had been infected by smallpox patients treated there in 1872.

Dr. Napias, in the *Manuel d'Hygiene Industriel*, relates several epidemics of smallpox breaking out among the workers manipulating infected rags.

Dr. B. Thompson, health officer of Plainwell, Mich., reports (State Board of Health, Michigan, 1882, p. 393) a case of smallpox contracted in the sorting room of the paper mill where the patient worked, and from this case the disease spread to other families in the place, becoming epidemic.

The Fifth Annual Report State Board of Health, Massachusetts, page 548, reports an epidemic of smallpox originating in the rag-picking room of one of the paper mills in West Springfield, which spread rapidly through the place.

Fifth Annual Report State Board of Health, Connecticut, prints the investigations of Dr. C. O. Baylis, West Kent, England, who reported three separate "sets

of cases of smallpox, each set arising from the sorters and cutters in a paper mill located there. In all 40 cases originated from this source. When the rags from which these cases originated were disinfected the disease stopped."

The Report of the State Board of Health, Connecticut, for 1883, page 225, mentions epidemics of smallpox at Manchester and Windsor Locks; the infection being introduced by rags in each place. In Windsor Locks the disease broke out the second time in the same year.

The Seymour Paper Company have their manufactory at Windsor Locks, and import their rags from Egypt, where smallpox is always present. The report adds significantly: "This company has engaged the attention of sanitary authorities, both State and national, many times through their inattention to the laws concerning disinfection and vaccination." Many Egyptian rags are received at New Haven, New York, and Boston.

The First Annual Report of the State Board of Health, Pennsylvania, page 218, records an epidemic of smallpox at Spring Mill, which originated in the Hamilton paper mill, near that place. In 1885 there were two attacks—one in April, one in September. In examining into the cause of the outbreak Dr. William B. Atkinson, special medical inspector, says: "While examining the paper mill I regretted to find that there was no positive method by which the rags, both domestic and imported, could be completely disinfected."

These outbreaks have occurred notwithstanding the proprietors "employ a physician yearly to inspect and vaccinate all their people."

In the report of the Pennsylvania State Board of Health, 1886, may be found some interesting correspondence between the proprietors of the mills mentioned and the authorities of the State concerning some Japanese rags which were surreptitiously taken from a warehouse where they were stored. Their disinfection had been ordered by the authorities, but this had not been done, and the rags were taken by a roundabout way to their mill. When discovered, the proprietors agreed to introduce immediately some method of disinfection at their place.

In the Fourth Annual Report of the State Board of Health of Massachusetts, 1873, page 468, there is a table showing the number of cities and towns in that State which had epidemics of smallpox that year. The table gives the names of the cities and villages and the source of infection as established by thorough investigation, and is as follows:

| City or village. | Cases. | Cause. | City or village.       | Cases. | Cause. |
|------------------|--------|--------|------------------------|--------|--------|
| Adams .....      | 34     | Rags.  | Lee .....              | 15     | Rags.  |
| Blackstone ..... | 10     | Do.    | Montgomery .....       | 6      | Do.    |
| Commington ..... | 19     | Do.    | West Boylston .....    | 1      | Do.    |
| Dighton .....    | 17     | Do.    | West Springfield ..... | 16     | Do.    |
| Fitchburg .....  | 25     | Do.    | South Hadley .....     | 8      | Do.    |
| Holyoke .....    | 32     | Do.    | Dalton .....           | 6      | Do.    |
| Huntington ..... | 3      | Do.    |                        |        |        |

From these towns the disease spread to others; in some cases the source of infection was clearly traceable, but of course it was impossible to determine just how far-reaching the epidemic became. Numerous localities were infected, and how far the infection at these other places was chargeable to the infected rags can not be known.

This report was compiled by the State board of health in compliance with a resolution of the House of Representatives in 1873, instructing the board to inquire into the cause of the alarming proportions which the epidemic of smallpox had attained.

The Annual Report of the State Board of Health of Massachusetts, 1882, states as follows: "The disease, smallpox, now exists in Bernardston, carried from a paper



mill in Holyoke; in Deerfield, carried by an operator from Turners' Falls, and in Northampton from the same source. Holyoke had 38 cases in 1882."

In the Nineteenth Annual Report of the State Board of Health, Massachusetts, page xvi, Dr. Withington reports 4 cases of smallpox originating in the sorting room of the Parsons Paper Company mills, in Holyoke, in March, 1887; and after a careful examination concludes that the women affected became so through the medium of the rags, but whether foreign or domestic he was unable to say, as both were being used.

He also investigated the outbreak of smallpox at Huntington in April, 1887, at the Chester Paper Company, where there were several cases, and he says that the rags were the medium of contagion, both domestic and foreign being used, some from Russia, some from Leghorn. His investigation at this mill induced the doctor to say, "a serious neglect on the part of the proprietors in their disregard of one of the important sanitary provisions of the statute" caused this outbreak (he does not state whether this is nondisinfection, nonvaccination, or both). The same month, April, 1887, another outbreak of smallpox occurred at Dalton, the victim being an employé of the Weston Paper Mill in that town, and the doctor says: "The rags used here were mostly new, such as collar cuttings and new linens. Some came from Leghorn which had been washed and disinfected before shipment."

From the same report another outbreak of smallpox is mentioned, occurring in Westfield in May, 1887, the origin of the infection being rags. This report says "that the statutes relative to vaccination and revaccination should apply with special force to paper mills, which from causes already shown are especially liable to outbreaks of smallpox among their operatives."

In the First Annual Report of the State Board of Health of Wisconsin for the year 1876, Dr. E. L. Griffin reports 3 cases of smallpox in as many different families, living in Neenah and Menasha; all were taken ill at the same time, and were employed in sorting rags at the paper mills, the disease being due to infection contained in the rags.

In the Second Annual Report Wisconsin State Board of Health, 1877, is the following:

"During the year ending September, 1877, the city of Menasha was visited by an epidemic of smallpox extending from December, 1876, to May, 1877, assuming in progress a severe form. During that period about 70 cases occurred with a proportion of deaths of 1 to 6. From May to December several more cases were reported, but no deaths, most of the cases assuming a mild form. The epidemic originated at the paper mills at Neenah, and the cases occurring in Menasha all sprung directly or indirectly from that source. The first two cases under the care of a physician came into my hands. They were young women 18 to 20 years of age who had been working in one of the paper mills at Neenah and had never been vaccinated.

"In Neenah the disease began in November, 1876, simultaneously with the outbreak in Menasha, and continued with short periods of intermission through the winter and well into the warm weather of the spring. During this time there were in this city 20 unmistakable cases, the mortality being light."

In the neighboring city of Menasha there are 70 cases, with a much larger proportion of fatalities. In both places the original source of infection was the paper mills.

Dr. J. R. Barnett, who attended many of these cases and who thoroughly investigated the whole subject, states that the rags came from abroad, and he uses this expressive language: "The bales thus sent out are infernal machines for the disseminating of zymotic poison."

One of the commissioners (Dr. Kempster) was personally cognizant of this epidemic, living but a short distance from there at that time, and was thoroughly

familiar with the details of the outbreak as presented in the above report. There were two other outbreaks of smallpox originating in the same mills while Dr. Kempster was living near there, and of which he had personal knowledge, but the details of which are not at hand.

In the Boston Medical and Surgical Journal, vol. 1, 1875, Dr. F. B. A. Lewis, of Watertown, N. Y., reports as follows:

"Some rags had been received at the paper mills in this place from California. These rags were sorted by 21 girls in one large room, 7 of whom were attacked at about the same date.

"The superintendent of the room stated to the doctor that the rags were moist, and had a peculiar odor, and that among them were bandages, poultices, some entire articles of underwear stained as though from the persons of invalids. Some took the disease who worked in other parts of the mill but who came into the sorting room while these rags were being sorted. In all 40 cases occurred, and 13 or 14 died; some of the cases appeared to be scarlet fever."

The Fifth Annual Report of the Massachusetts State Board of Health, 1877, reports "smallpox originating in the rag-packing room of one of our paper mills and spreading rapidly, as the patients were not isolated."

The Report of the State Board of Health of Michigan, 1878, reports that William Symonds, M. D., health officer of Warren Township, gave the details of 23 cases of smallpox occurring between February 1 and May 17, 1877, the disease originating from the paper mills in that place.

The National Board of Health Bulletin, vol. 1, No. 44, May 1, 1880, contains a report from Ypsilanti, Mich., in which Dr. E. Batwell, health officer of the town, reports 2 cases of smallpox, the origin of which was in the paper mills located there. The patients were seized with smallpox at the same time, and several neighbors were exposed before the nature of the disease was made known.

Charles F. Withington, M. D., has a lengthy article in the Eighteenth Annual Report of the State Board of Health of Massachusetts, page 48, which states that in answer to a series of questions which he propounded to physicians residing in that State he received answers from 19, who stated that they knew of cases of smallpox having arisen from rags. "Two writers described each 3 distinct outbreaks, 4 described 2 epidemics, 5 others gave replies which indicate that they have known more than one outbreak of smallpox from rags, and the remainder, 9 in number, speak of a single epidemic originating in rags. Hence, we have in all at least 33, and probably more, distinct epidemics reported by these physicians, in which smallpox was transmitted by this channel." It is further shown that several of these epidemics came through foreign rags. One of the physicians, Dr. Andrew F. Reed, of Holyoke, said regarding the source: "The statement made that no cases came from foreign rags is not true." Dr. Best said: "Six cases of smallpox to my personal knowledge were from foreign rags."

As to whether rags convey other contagious diseases, Dr. Wilcox, of Ticonderoga, N. Y., said he knew of their having conveyed typhoid fever, and that this disease had been more common relatively among the rag-workers in the Ticonderoga paper mill than among other classes of people.

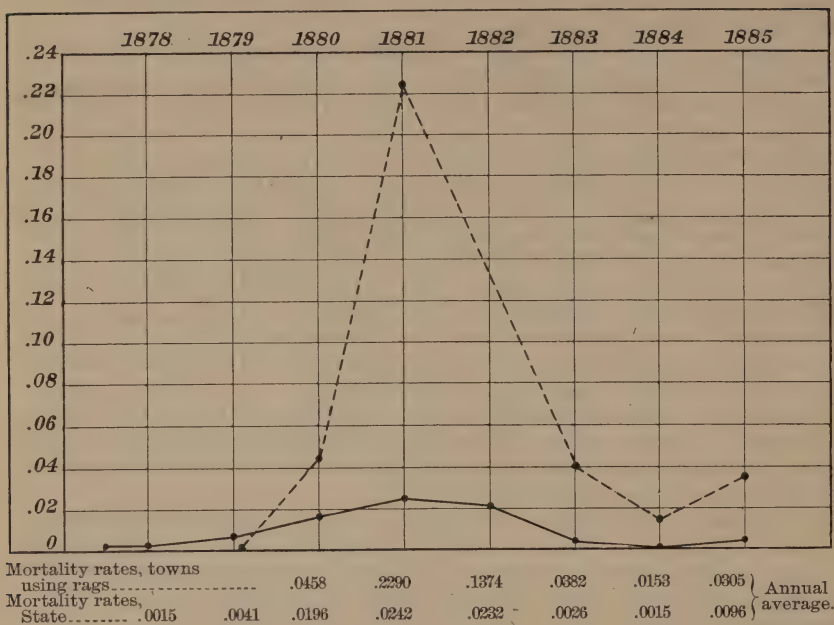
Dr. George D. Coleny, of Fitchburg, replied relative to diphtheria: "It is certain that in the epidemics of diphtheria occurring during the last six years, cases were more common in this class (rag-workers)."

Dr. J. W. Hastings, of Agawam, made the same reply as to scarlet fever (that it was much more frequent among sorters of rags relatively than in other classes).

Finally, Dr. Withington prepared a series of charts for several diseases, which are published in the same report, showing that for a period of eight years the mortality rates in the towns where rags are used in paper-making, contrasted with other towns in which rags are not used, is as follows:

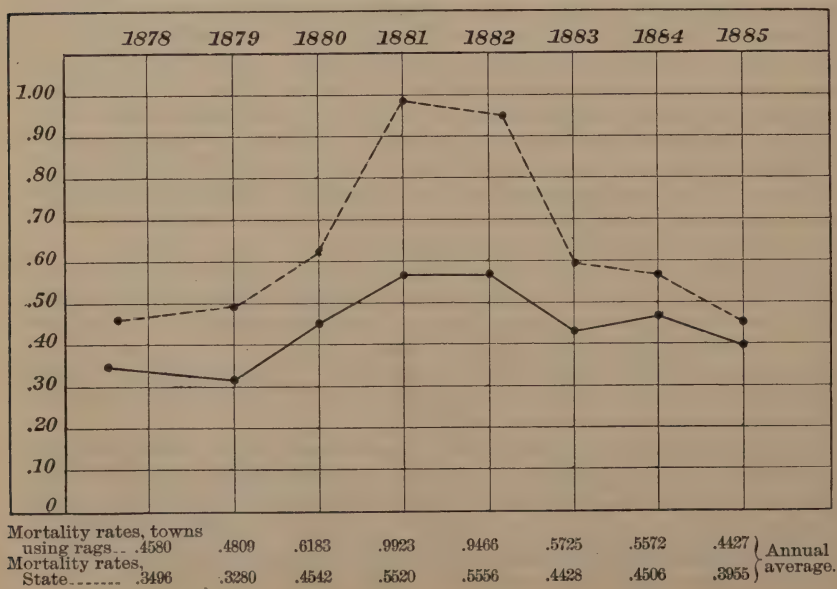
## SMALL POX, CHART NO. 1.

[Towns using rags indicated by the dotted line; State at large the black line.]



## TYPHOID FEVER, CHART NO. 2.

[Towns using rags indicated by dotted line; State indicated by black line.]

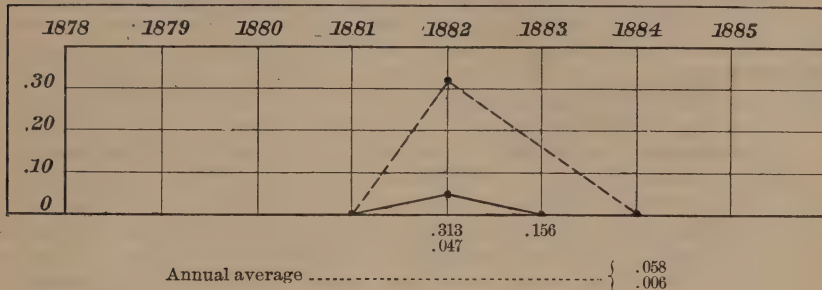




The highest point of the wave lines is attained in 1881, and shows the relative mortality from smallpox and typhoid fever in rag-using towns, and is contrasted with the lower line, which shows the relative mortality of smallpox in towns where there are no rag establishments.

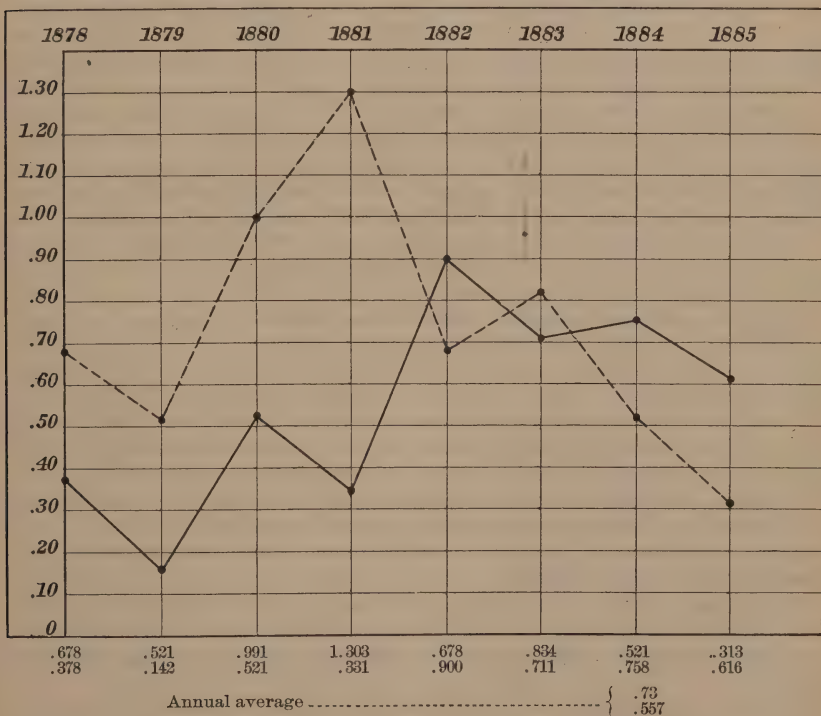
SMALL POX, CHART No. 3.

[Towns using rags indicated by dotted line; towns not using rags indicated by black line.]



TYPHOID FEVER, CHART No. 4.

[Towns using rags indicated by dotted line; towns not using rags indicated by black line.]



To verify the charts Dr. Withington selected a group of towns in the State in which there were rag-using establishments, and contrasted them with another group of towns, having the same general topographic features, but which were not users of rags, or did not contain rag warehouses, but manufactured other

articles which confined the operatives within the various establishments. Each group presenting conditions as nearly similar as it was possible to get them. The conditions are shown in charts numbered 3 and 4.

In these charts the upper line represents the relative mortality in each disease in the rag-using towns as compared with the mortality shown by the lower line in similar towns where no rags are used.

The charts demonstrate in the most conclusive manner the fact that in those towns in which are located the establishments using rags the various forms of disease charted are much more severe, and the mortality greater than in the towns where there are no rag establishments. These conditions coincide with observations made relative to the great rag centers in Europe where much the same conditions may be observed but which will be referred to later.

The frequency and persistence of epidemics of smallpox in European cities which contain receptacles for rags or manufacture them is a significant fact. The disease is very common in Ghent, and often severe; not infrequently it has been traced directly to those who handle or sort rags, as may be seen from the reports of the U. S. consul whose headquarters are at that place, and who has frequently reported epidemics of this disease to the State Department in his official dispatches. June, 1890, his dispatch of that date, states "that there is ground for believing that the malignant germs resulting in the present epidemic (of smallpox) are introduced by rags." In his dispatch dated April 8, 1892, he states, "I recently learned that an outbreak of smallpox here several months ago occurred exclusively among the workmen at the docks who had been employed in unloading old rags." On the 12th of April, 1892, he reported that there were then over one hundred cases of smallpox in the city of Ghent.

In his dispatch dated June 14, 1892, he states that the infection (smallpox raging there at that time) was introduced into Ghent through the medium of foreign rags, and that the epidemic broke out in the quarter of the town inhabited by workmen employed in unloading rags at the dock, and in this dispatch he alludes to another epidemic, at some previous time, attributable to the same cause.

In Antwerp the same thing has been noted; smallpox and typhoid fever being much more frequent than in other cities, similarly situated in the same country, which do not deal so extensively in rags.

In a table showing the number of deaths from smallpox, from March 4 to June 17, 1893, there were 108 deaths from smallpox in Antwerp. At Hanover, another large rag center, smallpox is much more frequent than in other cities of the same size, similarly situated in the same country, which are not rag centers.

The U. S. consul-general at Berlin, in a dispatch to the State Department, says: "There is actual danger wrapped up in every bale of rags which comes to our shores, and the only efficient way to disinfect them is to burn them."

In Egypt, Turkey, Asia, Greece, and generally throughout the countries bordering upon the Mediterranean, where we made investigations, we found that smallpox is never absent, and large quantities of undisinfected rags find their way annually into the United States.

Reports from England, already cited, show how often smallpox occurs in those establishments where rags are used, and the same thing may be said of places in the United States from which we have reliable reports, as, for instance, in Massachusetts.

It is not yet determined satisfactorily how long the virus of smallpox may remain active, but there are many well-authenticated instances showing that the virus has retained its activity for more than one year.

The most remarkable case of the kind is related by Dr. Walton in the Richmond and Louisville Medical Journal in 1873, in which there is a report that a young

lady had taken smallpox by putting on a dress that twenty years before had been worn by a lady during a spell of smallpox. The dress, in the meantime, had been thrown in a garret loose, where it had remained until the young lady put it on.

The spores of anthrax have been found by Prof. Koch to retain their activity and to exert their poisonous energy after they have been kept dry for a period of twelve years. Experiments made with the vitality of other disease germs show that many of them retain their activity for many months.

George H. F. Nuttall, M. D., of Johns Hopkins University, in a book entitled "Hygienic Measures in Relation to Infectious Diseases," states as follows:

"That the bacillus of consumption retains its virulence for five months in dried sputum; that the bacillus of typhoid fever withstands drying for three months, and also resists the action of carbolic acid; the bacillus of diphtheria, if kept in clothing in a damp, dark place, may retain its virulence from four to seven months. The germ which produces pneumonia resists drying and sometimes remains infectious for two or three months, and may be inhaled with dust, producing an attack of pneumonia. Of the bacillus of cholera, he says, "Freezing does not kill it, and in a low temperature with incomplete drying, or dampness, it may retain its activity for months."

The same author says that the bacillus which produces the rag sorters' disease may remain active for a long time, especially in the dust of apartments and hay-lofts, and that it is sometimes found in garden earth and in putrefying matter.

#### CHOLERA.

Concerning the transportation of cholera germs by means of rags and old clothing, there is abundant evidence to show that it is so conveyed, as the following instances demonstrate:

As long ago as 1848 Prof. Alonzo Clark, of New York City, cited two instances of cholera being brought to the United States, as follows:

"The ship *Swanton*, sailing from Havre October 31, 1848, bound for New Orleans, had German emigrants on board who came from cholera-infected regions; and on November 9 the ship *New York* sailed from the same port under the same conditions. Havre was free from cholera.

"On November 25 cholera broke out on the *New York* and on the 26th it appeared on the *Swanton*, the ships at that time being hundreds of miles apart on the ocean."

"The captain of the *New York* stated that a cold wind came up, causing the emigrants to unpack their clothing for warmer goods, the clothing having been packed originally at their homes, where cholera prevailed. The next day after unpacking the clothing cholera appeared on the ship."

"The ship *Swanton* had run into warm weather, and the captain of that ship reported that the emigrants on board unpacked their clothing which had been originally packed in their homes, where cholera prevailed, in order to get thinner clothing; and the next day cholera appeared on that ship."

Dr. S. Brush reports the following instance: "In the summer of 1849 a family residing in northern Indiana died of cholera. The clothing of the family was packed late in the spring of 1850 and sent to some relatives in Castalia, Ohio, who opened the box and used the clothing. The latter family was attacked with the disease, being the first in the town; and from them the cholera spread through that village and the surrounding country, being very fatal."

In House Ex. Doc. No. 95, Forty-third Congress, second session, which is a report of "The cholera epidemic of 1873 in the United States," prepared by Ely McClelland, M. D., assistant surgeon in the U. S. Army, the following cases are reported:

"In August, 1873, some Russian emigrants reached Yankton, Dak., having come direct from the Crimea, where cholera then existed. They sailed from Odessa,



There was no cholera on shipboard, none at Yankton, or any other place en route. They brought boxes of clothing, etc., with them. At Yankton they were temporarily lodged in vacant schoolhouses. Arriving there they unpacked their belongings, and immediately afterwards 2 children were taken ill and died of cholera; and the disease spread rapidly, 42 cases occurring among the emigrants, from whom it spread to the citizens."

He reports the facts of another case as follows:

"A family named Antonson came from Vuk, a place near Bergen, where they remained three weeks before being able to get a vessel on which to sail to New York. Cholera was prevalent in and about Bergen when the family went there. There was no cholera on the vessel upon which they came, nor was there cholera in New York when they landed, June 26, 1873. From New York they went to Willmar, Minn., passing no place where cholera existed. On July 2 the family opened their boxes containing bedding, clothing, etc., and on July 3 one of the party was taken sick with cholera; and the rest of the party, with one exception, were all taken ill with the same disease."

He also relates the following case:

"A family of Hollanders left Tubbergen May 31, 1873, arriving in Carthage, Ohio, where there was no cholera. On the 13th of July the boxes and bales of bedding, etc., arrived and were unpacked and hung up about the house. On July the 15th one of the children was stricken with cholera; and six of the residents of that house died of the disease. From this center cholera spread to other places in that city. Thorough investigation was made of this case, and it was found that the family went from Rotterdam to Liverpool, and sailed thence for New York. There was no cholera in Liverpool, but it did exist in Holland, as is shown by extracts from the *Nederlandsch Tijdschrift Voor Geneeskunde Eerste Afdeeling*, 1873, where it is recorded that more than forty places in Holland were infected by cholera. The family went straight through from Baltimore to Carthage, stopping only overnight in Cincinnati, reaching Carthage on the next day, the 10th. On the 13th their boxes and bedding came, and the contents were hung up to air and dry. On the 15th a child 3 years old was attacked within forty-eight hours after the boxes of goods from Holland were unpacked. Other members of the family died from the disease within a week.

"There have been comments upon this case, to the effect that it had not been shown that cholera existed in Holland, whence these people came. To determine this point I made search as to the existence of cholera in Holland at that time, and the results are given above. As a matter of fact, during that year the disease visited nearly all the principal cities and villages of Holland, the names being given in the number of the *Journal* above quoted."

Prof. Hirsch stated at the Berlin Sanitary Conference, held in July, 1884, that his investigations at Posen in 1873 showed that in several instances articles of clothing had been brought from cholera-infected localities to places remote which were free from the disease. The effects having been unused for some time, they were then unpacked, and the persons "who had directly to do with the infected clothes were the first to be attacked with the disease."

He cited the following:

Concerning the case quoted by Prof. Leyden, he said that in the town of Muhlhausen, in Thuringia, there were 9 cases of cholera, 4 proving fatal, in the cholera epidemic of 1873, all of which, with the exception of 1 case, belonged to one house. The house was inhabited by 6 families, numbering 23 persons. Three of the families, numbering 11, inhabited the basement floor. Behind the house was the drain of a closet, which was used only by the inhabitants of the basement, other water-closets existing for the inhabitants of the other stories. The first case of cholera occurred August 26. The patient was a woman who had come a few weeks before to Muhlhausen from St. Louis, in the United States of America, via

New York, Hamburg, and Bremen, but had only received the effects which she had brought with her from America about the beginning of August. Among these effects was some soiled linen, which she sent to be washed, and some confectionery, which she and her sister, in whose house she was living, partook of. A few days afterwards the newcomer was attacked with cholera; then her sister, her child, and her grandmother. And soon afterwards cases of cholera occurred amongst the other families. Out of the 11 persons inhabiting the basement only 2 escaped the disease, and 4 died.

When the effects left St. Louis cholera had been raging severely in the quarter of the town from which they came. There was no cholera in Muhlhausen until after the arrival and unpacking of the baggage brought by this family.

Dr. John H. Rauch, in an article published in volume 13 of the American Public Health Association for 1877, says, after referring to the three epidemics of cholera reported as occurring in 1873, at Carthage, Ohio, in Minnesota, and at Yankton, Dak., brought by infected clothing belonging to emigrants, as follows:

"These three instances, which have now become historic, might be supplemented by my own experience as sanitary superintendent of Chicago during the same year. The first cases in this city were in three different families which had received emigrants from Europe direct from the port of New York, in which city, it should be remembered, there was no cholera during the entire year. Members of these three families were attacked by the disease within a short time after the arrival of the emigrants, and after thorough investigation had been made the clue to the outbreak was discovered, namely, the infected goods of the emigrants, as in the similar outbreaks in Ohio, Minnesota, and Dakota."

In 1854 cholera broke out in the village of Ridgemont, Bedford County, England, and 11 cases occurred, all of which were fatal.

It was ascertained that the first case there was that of a man whose son had died of cholera in London a week or two before, and whose clothes were sent to Ridgemont. The man to whom they were sent unwrapped the bundle, was seized with the cholera and died; and this case was the nucleus of the epidemic. An instance of similar nature was reported from Lusthien near Munich, where the first case of cholera appeared in the house of a laborer, one of whose daughters was in service at Munich. The latter sent her parents some clothes which had belonged to a family, some members of which had just died of cholera; this clothing was at once appropriated and worn; three days afterward the father and mother were seized with cholera and died, and other members of the family took the disease.

Dr. Lebert reports the case of a man who was attacked with cholera, having worn the clothes of a person who had died of the disease two months previously. Dr. Brown, of New York, reports in the *Sanitarian*, July, 1885, the case of a woman 67 years old who died of cholera during an epidemic. Ten months after the subsidence of the epidemic in the country, the husband opened a trunk which contained wearing apparel of the dead woman and gave them to his niece, the man died of cholera the next day.

The report of Dr. Ruysch already referred to (Rags, a National and International Danger), states that a ragpicker from Amsterdam where cholera was raging in 1866, introduced the disease into the city of Tilbourg; that at Druten, a ragpicker was the first victim of cholera in that commune, and he states also, that at Heusde, Oudendosch, Hindeloopen, Nieuwsburg, Leeuwarden, and Bois le Duc, the cholera was propagated by old clothing. That at Mearssen the first one attacked with cholera was a ragpicker. Dr. Ruysch quotes from the *Annales de l'Inspection Neederlandais*.

Dr. George M. Sternburg, now Surgeon-General U. S. Army, relates in the *New York Medical Journal*, August 29, 1885, an instance reported to him by Dr. Sonderegger, president of the Swiss Physicians' Commission, which was investigated by Prof. Biermer, of Breslau, and by Dr. Zehnder, vice-director of the board

of health, that an outbreak of cholera occurred in the village of Kriegstetten about 100 kilometers from Zurich. At this village is a paper mill, and one of the rag sorters or rag cutters was taken ill with cholera and died, the next day 16 more workwomen, all rag tearers, were taken sick, and 11 died. Careful investigation showed that the rags came from Zurich, where cholera was epidemic. The rags were then disinfected by boiling, and there were no more cases of cholera.

Dr. Drasche, in commenting upon the foregoing case, said that while it was difficult to prove absolutely that cholera is transmitted by rags, yet the preponderance of evidence is to that effect, and that rags should be considered dangerous from cholera-infected regions.

E. Hoffman, a delegate from Austria to the International Conference in Rome, 1885, puts himself on record thus:

AUGUST 11, 1885.

VERY HONORED COLLEAGUE: In reply to your highly-prized letter, which I received yesterday, I reported as follows:

"I hold that rags which come from regions infected with cholera are exceedingly dangerous, not merely because they may be soiled with cholera dejections, but especially because they hold in the interior of the bales, the infectious material longer than might otherwise be possible, for the dejections, etc., dry out very slowly; and the warmth in the interior of the bale is favorable to the growth of microscopic organisms. On the whole there takes place in this respect, the very same process which is always to be observed in single rags, where the infectious material is kept moist a longer time in the folds, or in places where it is more closely laid together, and keeps the microscopic organisms contained therein much longer in a condition to multiply.

"In Austria whenever the cholera breaks out in another country the importation of rags is imperatively forbidden. Special regulations about the disinfection of rags do not exist, and only general directions for disinfection are enforced. I, myself, would employ only heat (steam) and complete aeration. It is of the highest importance in this matter to see to it that only thoroughly dried rags are packed in bales and brought into trade. With reference to the so-called rag sickness, which in my opinion, is a form of anthrax, and which affects especially the workers in paper factories who open bales of rags and perform the first work upon them, sorting and cutting the rags, I have required that the rags before being manufactured should be treated with superheated steam, then spread upon a grating and thoroughly dried."

In the British Medical Journal, August 23, 1873, there is an article on "The channels through which cholera is communicated," by John Murry, M. D., inspector-general of hospitals in India, in which he says as follows:

"In India in 1869, under the orders of the Government, I collected the opinions of the medical officers in that country on the chief points in the history of cholera. The result shows the views of 505 members of our profession who have all had experience of the disease. By 492 of these, the clothes and bedding were recommended to be burned, while only three opposed this view."

He cites many instances to show the communicability of cholera by clothing, etc., and among them this: "One of the most remarkable illustrations is related by Dr. Simpson, who states that a young lady in 1832 was attacked by cholera after wearing a cap which had been worn by her aunt who had died of cholera nearly a year before." The cap had been set aside in a drawer which was not opened until that day. Similar cases are mentioned as occurring in England and Germany, by Prof. Pettenkofer, of Munich, 1854, by Dr. Seibert, of Frankfurt, in 1856, and by Dr. Fauvel, in France, in 1868.

Prof. Brouardel, of Paris, in *Annales d'Hygiene Publique*, 1885, has a very interesting article on the measures to preserve Europe from epidemic diseases, pest,



yellow fever, cholera, etc., and refers to effects, linen, etc., as a means by which contagion is introduced into the country and of the great necessity of carefully guarding against the introduction of disease by this method. He says "The linen which has been polluted by the dejections of cholera patients is a powerful agent of propagation, sometimes direct, when by the contact of the hands one carries the germ to the food; when one breaths the effluvia; or indirect when the people drink the water below the washhouses;" and he cites several examples of the kind to sustain his opinion.

Dr. Edward O. Shakespeare, of Philadelphia, in his "Report of cholera in Europe and India," which is a monument of painstaking labor and research, says, page 81, in discussing the question of the transmission of cholera by linen and clothing contaminated by choleraic dejections: "In the accounts of choleraic epidemics that we have reviewed, it is stated time and again that such a person having in the course of the epidemic washed the linen of a cholera patient has been in turn attacked by cholera. But this fact is often subject to diverse interpretations, for one can always say that as in a choleraic focus there exists for each individual many ways of being attacked by cholera, it can never be affirmed exactly what has been the origin of the attack of cholera.

"The data which we are going to relate seem to us, on the contrary, to warrant but one conclusion. One factor alone is concerned: Linen soiled by choleraic dejections, its exclusive and consequently incontestible action.

"A naval surgeon dies at Toulon of the cholera. His linen is sent to La Vallette, where they refuse to wash it. It is then forwarded to La Farlede, where the cholera had not yet shown itself. The daughter of the washerwoman, who had assisted her mother, is attacked by cholera and dies.

"At Sollies-Pont the first case was that of a woman who washed the linen sent from Toulon by her son, who was sojourning in that city and had been attacked by choleraic symptoms; she was carried off in a few hours.

"At Nantes the first case had been that of a Mr. Conn, living in the quarter of the Gare. His linen was given to a washerwoman, the widow of D., who on the 18th of October washes this linen soiled by choleraic dejection. Attacked the 18th, she died the 22d.

"At Yport there arrived from Cette on the 28th of September, Ebaz, one of the sailors of a Newfoundland boat. The 29th he had his effects in two lots soaked in a tub. (He had had an attack of cholera at Cette, from which he had completely recovered). In this task he was assisted by his sister-in-law and his brother. The 4th of October his sister-in-law went to the fountain to wash these same effects; in returning she was attacked by all the symptoms of Asiatic cholera and died in a few hours. She had had the diarrhea since the evening before.

"All these facts appear to us conclusive that to handle and to wash linen soiled by cholera dejections is to expose oneself to the cholera; that soiled linen is an agent of transmission."

"In all the choleraic epidemics it has been remarked that the washerwomen particularly were attacked. The epidemic of 1884 was not an exception. At Yport Dr. Gibert notes that the laundry people have formed a considerable contingent of the cholera patients.

"On the 23d of July there arrived at Porta (Corsica), a country up to then entirely exempt, the Marseilles postman. He had just passed his quarantine of seven days at the lazaretto of Finowchiarola, where he had had vomiting and diarrhea, which were completely arrested by a strong dose of opium.

"At Porta he stops at the house of his mother-in-law. On the evening of his arrival she opens his trunks, takes out their contents and dusts everything, putting aside the dirty linen to wash it, which she does the following morning. In the evening of that day, about 10 o'clock, she is attacked with violent colic and dies twenty-six hours after the appearance of the first symptoms.

"On the 26th of July, at Milhas, far from every epidemic focus, and where up to then had not occurred a case of cholera, there arrived at Mrs. B.'s her husband and two daughters, fleeing from Marseilles back to their own country. One of the girls had at Marseilles nursed two women who died of cholera. She had been given several vestments which belonged to them. She had put these in a trunk that she brought back to Milhas. Mrs. B. and one of the daughters opened this trunk and took out the clothing, handling and washing it. On the 20th both die from a frightful attack of cholera."

In another case he cites an instance where "Mrs. R. simply opened a trunk containing soiled clothing; she handled it, but did not wash it, and succumbed from a frightful attack."

"On the 28th of July, at the hamlet of La Couche, far from the hotbeds of disease in the south and up to that time exempt, Mrs. R. dies in a few hours. The evening before the family had received a trunk from Toulon. This trunk had been sent by a relative who, having lost her daughter by cholera, had wished to save some clothing from being burned and had hastily sent it to La Couche in this trunk. The woman R. had opened it and handled the clothing.

"At Roquevaire, on the 23d of July, the woman Clotilde O. died. It was the first case at Roquevaire. They gave her bedding to a poor woman. The latter was attacked by cholera and died the 7th of August."

Prof. Koch, of Berlin, has uttered repeated warnings that all linen, etc., upon which there is dejecta, or vomit material, should be at once destroyed, and formulated his opinion before the Berlin Cholera Congress, as follows:

"First. Measures should be adopted by which the infectious matter be directly destroyed; also disinfection of the dejecta and the destruction or thorough disinfection of the linen; that the public should be instructed and warned of the dangers of using infected food, *e. g.*, uncooked food, unboiled water, and especially of the dangers arising from the use of infected linen."

If the disease may be carried from place to place in clothing it does not require a stretch of imagination to assume that if those same garments had been torn apart and thus become "rags" that the disease might still have been carried. The process of tearing does not destroy the germs.

In the pamphlet prepared by the Lewy Bros., of Berlin (January, 1893), previously quoted, many of the proprietors of rag establishments did not respond to the questions sent them and furnished no information. Of those who made reply thirteen report cholera among their employés, either among sorters or nonsorters of rags.

Finally the report of an outbreak of cholera during the month of September, 1893, at Papiermühle, a small isolated community in the consular district of Barmen, Germany, inhabited by the owners and operators of a large paper mill at that place, establishes the fact of the communicability of cholera by the medium of rags.

The first case of cholera in that part of the country developed and proved rapidly fatal in a sorter of rags employed at that mill. The man enjoyed good health until the night of September 2, 1893, when he became ill, and died at 10 the next morning. The sudden and suspicious death of the man alarmed the inhabitants, and they applied to Prof. Dr. Doenitz, of the University of Bonn, to make a microscopical examination of the excrement of the man. He did so, and pronounced the fatal disease to be Asiatic cholera.

The next day after the first man died another man was taken ill and died; and the disease spread rapidly through the town and neighboring suburb, where some of the operatives lived. The Government at once detailed Dr. Unshelm, a sanitary commissioner at Hamburg during the epidemic there, and Dr. Frosch, assistant to Prof. Koch, to take charge of all sanitary measures at the place, and

if possible prevent the further spread of the epidemic. Investigation was made by the sanitary authorities, who reported that the Asiatic cholera was brought there in "a shipment of old rags, ropes, etc., received from Antwerp (where cholera had prevailed), and it is the belief of the eminent professors, physicians, and bacteriological experts that the Asiatic cholera was brought to this place in the rags, ropes, etc., above mentioned."

The first case of cholera appeared in a rag-sorter engaged in cutting up these rags and ropes, and the second case developed in a man who received the rags from this sorter and macerated them; the next case was a woman who assisted the sorter; and all the cases of cholera were among those persons who sorted, cut, or handled those rags, and at the date of the report 14 cases had occurred there.

The sanitary authorities took possession of the place, and immediately disinfected the rags, old rope, etc., by superheated steam, and disinfected the mill and buildings with sulphur and chloride of lime. The strictest sanitary laws were observed throughout the community by all the inhabitants, and the epidemic was immediately checked. The report upon this epidemic contains these words: "The first victim was the workman whose duty it was to unroll the old rags, cordage, and other similar material and cut it up into suitable lengths for the subsequent processes of paper-making, and while working among this infected material he is supposed to have eaten his midday lunch without first washing his hands, and thus the infection was surely transmitted."

To suppress the disease the most determined effort was made and proved successful.

The household effects of the cholera victims were destroyed by fire and their houses thoroughly disinfected, wells were closed, the graves of the victims dug 2 feet deeper than usual and partially filled with quicklime; a cordon of police guarded all roads leading to Papiermühle; no communication with the place was permitted, except to admit necessary supplies, and this was under the supervision of a sanitary inspector. Artisans who had been employed at the mills were not permitted to go there, and no one was allowed to enter the mill who would not submit to strict quarantine for ten days after leaving the mill. All food or water used was first thoroughly boiled or cooked. By these methods the epidemic was at once suppressed. This epidemic establishes two important facts: First, the transmission of cholera by means of rags, and, second, the suppression of the disease by the prompt execution of well-known sanitary laws.

This was the second instance of the suppression of an epidemic of cholera which occurred in 1893, the first being at the lunatic asylum at Neitleben, near Halle, Germany, where the disease broke out in a violent epidemic form in January, 1893, while we were investigating the subject in Germany, the strict quarantine rules established preventing our going into the asylum.

The disease was introduced into the asylum by means of drinking water. Prof. Koch was directed to supervise the administration of the sanitary laws in the institution and vicinity and succeeded in immediately checking the disease and preventing its spread by ordering and maintaining strict quarantine, and thorough sanitation.

The relative infrequency of the introduction of cholera germs in rags may be due to the infrequency of epidemics of cholera as compared with smallpox, and that thorough drying apparently destroys the activity of the cholera germs. Our investigations, however, have shown that in some places where cholera existed, or had but recently disappeared, the rags are baled while damp and retain their dampness until unbaled at their destination. These facts are set forth in the foregoing report.

Dr. W. M. Smith, health officer of the port of New York, who has given much time and attention to this subject, says in his report upon the "Disinfection of



rags" that "It will doubtless be admitted that cholera and other severe forms of contagious disease, such as smallpox, diphtheria, scarlatina, and typhus fever, can be communicated by cast-off or soiled clothing; but old rags, it is said, have no such history as carriers of contagion. It is urged that rags are gathered months before being shipped, and the contagion, if there was any, has lost its power. This is probably true of a great portion of the rags imported, but it is certainly true that there are in most, if not all, consignments rags that have been recently gathered, and it is also true that the contagion of some of these diseases may be preserved in clothing and old rags for weeks and months, and when exposed to the air in the presence of susceptible persons will communicate their deadly poison."

Sanitarians have for many years, and with perfect unanimity, urged the necessity of thorough disinfection of rags to prevent transmitting disease germs, and everywhere this demand has been stoutly resisted by those interested in the rag trade on the ground that disease is not carried by rags.

If we had no other authority, the pamphlet prepared by the Lewy Bros. gives a record of 34 outbreaks of contagious diseases caused or transmitted by rags, 13 of cholera, and 21 of smallpox and other contagious diseases.

Our investigations show 206 outbreaks of contagious diseases which were introduced by rags, including smallpox, cholera, typhus fever, *hadernkrankheit* (rag-sorters' disease), influenza, scarlet fever, etc., while typhoid fever and pneumonia are believed by some to be among the diseases which are conveyed by rags. Many of the epidemics became widespread, involving great loss of life.

Of this number, at least 74 outbreaks of contagious diseases caused by rags occurred in the United States. This does not include diseases brought by means of soiled clothing, being limited exclusively to those which were traced to rags. The actual number is doubtless much larger, but we have mentioned only those about which there can be no doubt. Every one of these epidemics might have been prevented if the rags had been properly disinfected. These epidemics will continue to come from time to time until all rags are disinfected.

At a conference of the representatives of the State boards of health and of maritime sanitary officials, held at Washington, D. C., December 10, 1884, the Secretary of the Treasury requested and obtained an expression of views from members of the conference in respect to the admission of rags from foreign countries.

The letter is as follows:

WASHINGTON, D. C., *December 11, 1884.*

The Hon. HUGH McCULLOCH,

*Secretary of the Treasury:*

SIR: The committee appointed by the conference of State boards of health to consider the subject of national action relating to health, which committee had the honor of an interview with you this day, hereby respectfully submit the views of the committee respecting the particular source of danger to health upon which you have expressed a wish to receive the opinion of the committee, namely, from imported rags.

Members of the committee believe that contagious diseases dangerous to the public health occur in the houses of the people in every country; that old rags are collected mainly from cast-off material from the homes of the people, and that old rags in whatever country collected are not free from danger, and that it would tend to prevent the introduction into this country of more than one contagious disease if all old rags so imported into the country should be disinfected before or upon entrance at the port of entry.

The committee are of the opinion that disinfection of old rags can be effected by boiling them thoroughly; by exposing them to superheated steam so as to insure a temperature equal to or exceeding 212°; by the use of sulphurous acid gas, the rags being fully exposed to the action of such gas in the ratio resulting from

the burning of 2 pounds of sulphur to each 1,000 feet of air, or by the use of the latter agent in any other form or manner which shall secure the subjection of the old rags to that agent in an effectual manner.

The committee further expresses the opinion that the disinfection of rags should be effected in any country where a proper inspection of the process of disinfection can be secured and such disinfection certified to by a representative of the United States.

H. B. WALCOTT, *Chairman.*

S. S. HERRICK, *Secretary.*

In 1885 Dr. George M. Sternburg, then surgeon, and now Surgeon-General of the U. S. Army, made investigations relative to the disinfection of rags, and the destruction of the bacilli in rags and old clothing, embodying the results of his investigations, as follows:

BALTIMORE, MD., *March 20, 1885.*

THE SURGEON-GENERAL OF THE U. S. ARMY,

*Washington, D. C.:*

GENERAL: In compliance with instructions contained in a communication dated March 19, 1885, and with the request contained in the inclosed communication from the honorable Secretary of the Treasury, I have the honor to submit the following opinion:

My studies relating to disease germs leave no doubt in my mind as to the possibility of the importation of the germs of cholera, malignant pustule, smallpox, and yellow fever in old rags, whether baled or otherwise.

The germs of malignant pustule (anthrax) may be preserved indefinitely without losing their virulence, and we have ample evidence that the germs of cholera or smallpox and yellow fever may be preserved in infected clothing or bedding for a considerable time; exactly how long has not been determined.

That such infected articles could be preserved in bales of rags can scarcely be questioned, and it seems apparent that they are likely to find their way into the rag pickers' collections during the epidemic prevalence of these diseases, especially in countries where there is no organized sanitary supervision.

Very respectfully, your obedient servant,

GEO. M. STERNBURG,

*Major and Surgeon, U. S. Army.*

In 1870 a decree was issued, on the advice of the committee "Consultatif d'Hygiène Publique de France," making obligatory the disinfection of rags, old clothes, etc., coming from Egypt and Algeria, and limiting their importations to the ports of Marseilles, Pauillac, St. Nazaire, and Cherbourg, where there was at that time means for disinfection (now in disuse).

England, as we have seen, provides that rags landed for importation to that country must be disinfected by steam heat immediately, or, in default, be burned by the custom-house authorities. This regulation is now in force. The health officer of the port of London, in his report to the local government board, points out the expediency, as well as the simpler and safer method of having all rags disinfected at all times before permitting them to enter the country instead "of having from time to time transient prohibitory regulations, which cause serious dislocation of trade and annoyance from their uncertainty; and that there should be a fixed and definite plan of dealing with such goods."

We heartily indorse this recommendation for the reason that our investigations have shown the absolute necessity for such a course, if we wish to avoid the danger of contagion from infected rags.

The International Sanitary Conference held in Dresden March, 1893, adopted rules for the "Prohibition of the importation of rags and cholera-infected cloth-

ing" from one country into another during periods of epidemics, and also emphasized the necessity that existed for one country to notify all the other countries when cholera occurred in either of them; also the extent of the disease, and what measures were in actual operation to prevent the distribution of the infection. The investigations made by us show that not one of the rules mentioned above has been carried out in the countries where the disease has appeared since that time.

In discussing the question of quarantine Dr. Edward O. Shakespeare, of Philadelphia, in his voluminous report on "Cholera in Europe and India," page 843, says: "Indeed, so far as cholera, smallpox, and scarlet fever are concerned, it is only cargoes of rags that may be looked upon with suspicion as possibly capable of transmitting the germs of disease from Europe to America."

Not only expert sanitarians believe in the necessity for the disinfection of rags, but representative men of commerce, at least in the United States, believe in such necessity. This is made evident by the following resolutions which were adopted by the Chamber of Commerce of the State of New York on the 3d day of June, 1886, in which they say:

"First. That invoices of rags accompanied by a certificate of the U. S. consul that they were gathered in a country which at that time was, and for six months immediately preceding had been, free from cholera or other contagious or infectious epidemic diseases should not be required to be disinfected either before shipment or on arrival. In the absence of such certificate rags coming from a port or country claiming to be free from such diseases should be disinfected on arrival.

"Second. That rags gathered in any port or country where such diseases then were or had been prevalent at any time within six months immediately preceding the shipment thereof, and whether such rags are exported direct or via any other port or country, and whether landed or stored therein or transshipped overside to another vessel for reexport, should be prohibited from being landed in the United States so long as any prohibitory order published by the Government or health officers remains in force, nor when the order is rescinded should such rags be landed until disinfected on arrival.

"Third. That quarantine regulations in relation to rags or other merchandise or the disinfection thereof should be uniform at all ports of entry in the United States, and should be under the sole control and management of the U. S. Government.

"DANIEL DRAKE SMITH and

"CONSTANT A. ANDREWS,

*"Of Special Committee.*

*"NEW YORK, June 1, 1886."*

The resolutions of the chamber of commerce assume that the U. S. consuls can ascertain that the rags were gathered in countries free from epidemic diseases. This is an impossibility; not even the rag exporters can tell, even if they felt disposed to do so, where the rags came from. There is no duty upon rags coming into the United States; therefore exporters who go to the U. S. consuls for invoices are not compelled to produce the original bills of purchase, which are required when dutiable goods are sent; consequently rags are shipped from one consular district to another, and even from one country to another, before being finally exported. Hence, when an epidemic disease occurs in one district or country, and a U. S. consul refuses to give an invoice to rag shippers because of the epidemic, the rags are sent to some other district or country where there is no epidemic, and exported from there, being branded as though they had been gathered in the non-infected country.

This we found to be the case in all the countries visited, most of the rags coming to the United States via England and sent as English rags.

If 206 outbreaks of smallpox and other contagious diseases which have been



clearly traced directly to rags, and which are here reported, do not carry any weight, do not prove the danger that constantly lurks in rags, then nothing will ever prove it. The facts are that rags do convey disease germs, that they are a constant menace to the community where used; that proper disinfection will remove the danger and prevent them from scattering pestilence. The practical question is, How much longer, how many more epidemics does this country desire to entertain before it puts a stop to this danger?

The investigations made by us show that at the majority of places visited where disinfection is attempted it was worthless or a sham. The following article, quoted from the *New York Therapeutic Review* for April, 1893, shows the worthlessness of present methods. In that journal Dr. Paul Gibier has an article in which he says that at the beginning of 1893 a distinguished physician in New York City handed him a package of rags, and on the envelope was the following: "Samples 'disinfected' old German rags, arrived and passed at the port of New York December 10." They came from Bremen, Germany. Dr. Gibier made a series of examinations and says that "microscopic examination showed blood corpuscles, white and red, and numerous bacteria." In order to ascertain whether they are virulent or not, he subjected them to the ordinary methods and found that there were 110 colonies of bacteria developed on the several plates. In speaking of them he says, "I shall not enter into the details of the different germs which were isolated, but will merely mention that I found 11 species developed in the gelatine; among them were the usual microbes of pus (*Staphylococcus albus*, etc.), and a *Streptococcus* resembling that of erysipelas and pathogenic for rabbits. The deduction from these investigations is that the rags examined, which, we should judge, came from a hospital or dispensary where they had been soiled with pathological products, had not been submitted to an effectual process of disinfection. Certainly they were not submitted to a high temperature, as among the germs were some *torulæ*, which can not survive a temperature of 158° F. even for a few minutes."

Referring to the matter of disinfection by heat where the bale is unopened, the *New York Medical Record* of May 29, 1886, has the following:

"Disinfection in the bale as at present adopted is of no use. This has been illustrated in a very interesting and conclusive experiment tried in Boston. The importers caused to be introduced into the different portions of bales where they were originally packed for importation, self-registering thermometers. These bales were afterward subjected to the steam disinfection without being opened at the port of entry, which was Boston, and the results as shown on the thermometers were carefully noted giving a range from 212° F. in one instance down to 85° F., the average being 109° F. Such a temperature, if it accomplished anything, would be in favor of propagating the disease germs rather than of destroying them."

Almost every country recognizes the necessity for the disinfection of rags, and certain of them prescribe the method. By their acts they proclaim in the most emphatic manner their belief that contagion is conveyed in the rags, by stopping the importation of them during an epidemic. If it is important to stop them during the continuance of an epidemic, it is certainly more important to stop them for some months afterwards, when rags infected by contagion would be most likely to find their way into the bales. Experience demonstrates conclusively that the only safety against the introduction of contagion by rags is to disinfect them. Diseases occurring when there are no so-called epidemics, such as typhoid fever, pneumonia, smallpox, scarlet fever, etc., kill more people than epidemics. It is to prevent the introduction of these diseases as well as to suppress epidemics that sanitarians are united in the opinion that rags should always be disinfected.

The principal argument used against disinfection is its cost. This is such a trivial matter that it should not be considered for a moment. The additional

expense, small as it is, becomes a charge upon the rags and is not a loss to the manufacturer, the consumer finally paying the cost. If disinfection is insisted upon and rags are not permitted to enter the United States without being properly disinfected at ports of entry or before they are used in the mills, so that all dealers must fare alike, the talk about the cost of the process will cease, but so long as one firm sends rags branded "disinfected" which in fact have never been disinfected, and another firm by reason of watchful oversight is compelled to disinfect, the latter has ground for complaint.

The talk so frequently indulged in by those in the rag trade about the "small margin of profit on rags" as an argument against disinfection is senseless. The business is enormous; the profits are by no means small. No better evidence of this fact is needed than the existence of the enormous establishments owned and operated by those engaged in the trade and the wealth which they accumulate. It was a common remark made to us by the rag exporters in Europe while we were there that "rags are gold now," and they manifested great uneasiness and anxiety as to the probable action of the United States in forbidding the importation of rags. With them it is not a question of the cost of disinfection. They are nearly everywhere prepared to do this if it is demanded, and are willing to go to the expense of erecting such disinfecting plants as the United States may require, provided this would not interfere with importation. The uncertainty which exists among exporters as to whether the disinfection of rags will be continued for any length of time, or discontinued in a few weeks or months when fear of the present epidemic of cholera shall subside, is a source of annoyance to them, for if it is to be discontinued they do not wish to go to the expense of putting up such buildings and apparatus as may be necessary to comply with United States law; but if thorough disinfection is to be regularly practiced and demanded at all times before rags are admitted, then there will be an end of complaints from rag importers.

So long as the process is conducted as it is at present it affords no protection whatever, and it would be better to discontinue it; for as now conducted it gives a sense of security which is false. Rags are branded "Disinfected" and so certified which have never been near a disinfecting room; and where the process is attempted we found but very few places, of all those examined, where it could be called thorough or where it was anything more than a sham, often deliberately and intentionally practiced, and done for the purpose of deception.

Exporters affect to believe that rags do not carry contagion; under these circumstances it is senseless to commit the process of disinfection to them. The way to insure proper disinfection is to make suitable provision for it on our own shores, under the immediate supervision of quarantine officers, as is now done with baggage and products from countries considered to be infected. When this is done there will be no more outcry against the disinfection of rags than there is now against the disinfection of baggage, etc., which everyone believes to be a wholesome quarantine regulation.

Experience demonstrates that the best known method to insure perfect disinfection is to spread the rags loosely upon racks and subject them to a temperature of 220° F. for thirty minutes. Wherever this is done the process should be under the immediate supervision of a United States officer having complete control of the work, and it would be best to have the process carried on at specified ports of entry in the United States, to be designated by the proper authorities, and no rags from abroad should be permitted to land at any port or place. All domestic rags (rags gathered in the United States) should be forwarded to the nearest disinfecting establishment for disinfection before going to their destination.

Dr. George Buchanan, physician to the local government board of England, in his report for 1883 and 1884, says: "Bales of rags can not usually be properly disinfected without exposure to heat in such a way that every article in the bale shall

attain a temperature of 250° F. The arrangement which gives greatest penetration of heat is the use of high-pressure steam."

In the "*Annales d'Hygiene Publique*," vol. 2, 1879, is the following:

"For the disinfection of rags it is necessary, as much as possible, to consider the interests of public health as well as those of commerce, and we judge that the previous disinfection of rags by heat is the process to be generally adopted, but to add thereto disinfecting vapors in special cases. The action of heat is prompt, almost immediate, which constitutes an economy of time, and heat alters neither the merchandise or its color, which is very important for the rag trade. We can not too frequently urge the importance of establishing large apparatus for disinfection by heat in our lazarettos. This apparatus is indispensable in order to treat the rags coming from abroad, as well as to cleanse those which are received from the interior of the country."

The disinfection of rags is proper quarantine service, for by it the introduction of epidemic diseases is prevented. Most of the rags coming into the United States enter by way of the ports of Boston, New York, Philadelphia, and San Francisco. The necessary apparatus could be supplied to these, or other ports if needed, and the work done under the supervision of United States quarantine officials, the cost of disinfection being charged to the importer. If, however, the present method prescribed by regulations made in conformity with recent quarantine laws (the sulphur process) is to be used, our investigation shows conclusively that in order to be made effective it must be thoroughly carried out, and the following plan is submitted:

Chambers for disinfecting rags and all other articles of commerce requiring disinfection must be practically air-tight, so that the sulphur fumes or steam can not escape; the chambers must be examined and approved by the medical or consular officer, or by an inspector to be appointed before disinfection begins.

If the disinfection is to be by the sulphur process, first ascertain the cubic contents of the chamber in square feet and enter the measurement in the inspector's book, together with the number of surface feet on the racks in the chamber. For disinfecting by sulphur fumes the articles must be exposed on racks so constructed that the lowest rack shall be at least 18 inches from the floor of the chamber, and the other racks above this must be not less than 2 feet apart. On these racks the articles shall be loosely distributed, so that the fumes may reach every part. Rags must not be laid upon the racks more than 6 inches in depth. After all openings in the chamber have been closed, weigh out and ignite the proper quantity of sulphur (3 pounds of roll sulphur for each 1,000 cubic feet of space in the chamber). Ignite the sulphur, close the entrance door, lock it, and place a seal furnished by the consular or other officer securely over the keyhole. The inspector must retain the key to the chamber in his possession. He shall note the hour of closing the disinfecting chamber in an inspection book to be kept for that purpose.

Six hours after the chamber has been closed it shall be the duty of the inspector to examine the seal, open the door of the disinfecting chamber himself, noting the hour of opening in the inspection book. The inspector shall sign his full name after the hour of closing the chamber, also after the hour of opening; and under no circumstances shall he delegate this duty to any person without the written authority of the consul or other officer, and such written authority shall set forth fully the reason why and the person who may be delegated to perform this duty, and such written authority shall be kept on file in the office of the consul.

If the inspector finds that the seal which he had placed over the keyhole of the entrance door has been broken or so detached that the door could have been unlocked, he shall weigh and ignite the same quantity of sulphur as originally used, reclose the door and reseal the keyhole, noting the fact in his inspector's



book; and he shall keep the chamber unopened for six hours longer. The seals shall be issued by the consular or medical officer to the inspector by number from time to time, and each seal canceled shall be prima facie evidence that the disinfecting chamber has been used to disinfect the maximum quantity of rags or other goods which its ascertained capacity permits. And the number of bales disinfected must tally with the number of seals canceled, except when a seal has been tampered with or destroyed and another has been used to reclose the disinfecting chamber; which fact must be noted in the inspection book.

At the expiration of the six hours of fumigation the inspector shall himself open the door and personally superintend the removal of the disinfected rags from the chamber into a packing or baling room, and the packing or baling room must be clear of all rags, bagging, jute, or any other such material before the rags from the disinfecting chamber are placed therein. It shall be the duty of the inspector to remain in the packing or baling room until all the rags which have been fumigated shall have been packed or baled ready for shipment. After the bales have been prepared for shipment it shall be the duty of the inspector before he leaves the baling room to affix upon each and every bale a certificate to be furnished by his superior officer, in form as follows:

CONSULATE OF THE UNITED STATES OF AMERICA,

The contents of this bale (or package), with its covering, numbered ———, has been disinfected under my personal supervision, in accordance with quarantine regulations, method No. —.

—————, ———,  
*Sanitary Inspector.*

Label No. —.

A leaden clamp tag may be affixed, as the consul or other United States official shall direct. If a blank form is used each and every such certificate must be filled out and signed by the inspector, and one certificate shall be securely fastened by the inspector upon each bale. He shall keep the running number of the bales disinfected in the inspection book, beginning with No. 1 each year, so that the book shall show each day the total number of bales certified by him.

If by any circumstance a certificate becomes worthless from injury or other cause said certificate must be returned to the consul or other officer and another will be issued in lieu thereof.

The certificates shall be issued to the inspector from day to day as required, and before new blank certificates are issued the inspector must show that all certificates previously issued to him have been affixed to bales or other packages which have been disinfected or returned to the consul or other officer. After the inspector has affixed his certificate to each bale or package he shall himself stencil upon the bale, in letters at least 1 inch in length, the word "Disinfected," and underneath his own name, thus:

DISINFECTED.

JOHN SMITH,

*U. S. Inspector.*

The stencil plate must be kept by the inspector, and when not in use by him it must be locked up and inaccessible to any other person. It shall be the duty of the inspector to examine the disinfecting chamber after the removal of the rags or other material, to see that the racks are in proper repair and in order to receive a new charge. If for any reason the racks or other parts of the chamber are not in a condition to permit the rags to be properly disinfected he shall withhold his certificate of disinfection until the chamber is repaired.

It shall be the duty of the inspector once in twenty-four hours to fill out and make oath to a certificate in form as follows:

## CERTIFICATE OF INSPECTION AND DISINFECTION.

I, ———, United States sanitary inspector at ———, do hereby certify that the ——— mentioned in invoice No. ———, hereto annexed, to wit, ——— bales, marked ———, and bearing upon each bale inspector's certificate, have been disinfected by exposure, under my seal, to sulphurous acid gas for a period of not less than six hours, in accordance with process third, prescribed in the United States quarantine laws and regulations approved April 15, 1893.

Attest:

—————,  
*Sanitary Inspector.*

—————, 189—.

## CONSULATE OF THE UNITED STATES OF AMERICA.

I, ———, consul of the United States, do hereby certify that the above is the true and genuine signature of ———, and that he was, on the date of signing the foregoing certificate, authorized to superintend the disinfection of ——— intended for shipment to the United States of America from the port of ———.

Dated ———, this ——— day of ———, 189—.

In testimony whereof, I have hereunto set my hand and affixed the seal of the consulate, at ———, this day and year next above written.

—————,  
*Consul of the United States.*

Said certificate or certificates shall be attached by the consul or consular agent to each invoice covering the number of bales described in the certificates, and said certificates shall go with the invoice to the port of destination; and no invoice of rags or other commodities which the quarantine regulations require to be disinfected shall be authenticated unless accompanied by the inspector's certificate.

The disinfection of all other articles of commerce required by the regulations, whether by the sulphur process or any other method, shall be done under the immediate personal supervision of the inspector, and the method used shall be guarded by the inspector in accordance with the foregoing requirements; the inspector's certificates shall set forth in all cases the method employed by him, the number of bales, packages, or parcels disinfected, and they shall be certified to and stenciled in the manner herewith prescribed for rags.

When steam disinfecting apparatus is used, the bale must be opened, the rags spread loosely upon racks to the depth of six inches, and subjected to a temperature of 220° F. for thirty minutes, the time to be reckoned from the moment that the thermometer registers 220° F., and this temperature to be constantly maintained during the whole of the thirty minutes, and the disinfection must be performed in the presence of the inspector, and the same precautions used in certifying and stenciling each bale as when disinfected by the sulphur process. In each method employed the sacking or other covering of bale or parcel must be disinfected with the goods.

## INVESTIGATIONS RELATING TO THE INVASIONS OF CHOLERA.

It is difficult to obtain accurate statistics in countries where there are no statistical bureaus, no regular quarantine service, and no officials charged with keeping statistical records, so that exactness as to detail can not be secured; but sufficient is known to show conclusively that every epidemic of cholera which has entered Europe for the past sixty years has followed very closely one of two routes. To make the matter clear, the route by which the epidemic of 1892 entered Europe will be given.

The disease is always present in India, which country is called the birthplace of

cholera, and where at times it becomes malignant and assumes an epidemic character. It thrives best where there are crowds of humanity and dirt, and finds its most genial soil where these two mingle.

The accompanying map has been prepared to show the routes by which cholera was carried from India westward. The red lines indicate the course of the epidemic of 1892 from its starting point in Hurdwar to Cabul, Herat, and Meshed, at which place the stream divided, one going via Kaaka on the Transcaspian railroad to Baku through Russia; the other kept the caravan route to Teheran, Resht, Tabreez, and Tiflis, again branching at Resht to Bagdad and going via Bassorah across the Arabian desert to Medina and Mecca.

Another route was via Kabul to Balkh, Bokhara, Khiva, and Orenberg, thence eastward to Omsk and Tomsk.

Some of the pilgrims from Bombay sailed up the Persian Gulf to Tao, thence by Bassorah across the desert to Medina and Mecca, but the larger number went via Camaran.

The quarantine station of El Tor is near the entrance of the Gulf of Suez, and Camaran is on an island at the southern extremity of the Red Sea. Other stations are located at Tao, the head of the Persian Gulf, Sinope, and Cavak, on the Black Sea, and Beirut, Smyrna, and Tripoli, on the Mediterranean.

The red dots in Europe indicate localities where cholera appeared in 1892; but the route by which it reached them is unknown.

The Afghans as a people are interested in commerce, and lead a migratory life for the purpose of carrying on their business, traveling from place to place in caravans, often numbering several thousand camels.

Sir Alexander Burns states that on one occasion he saw three great divisions with 24,000, 19,000, and 7,000 camels in each.

The Afghans move in such columns from their own country southeasterly into India, so governing their movements as to arrive at Hurdwar during the great Indian fair, held at that town annually, to which place the thrifty Hindoo comes, combining his religion with his desire to trade, for it is to Hurdwar that traders go from all parts of India to meet a like stream from Persia and Afghanistan, where they exchange the products of the two countries and indulge in their devotions.

The numbers coming annually to Hurdwar vary from 1,000 to 200,000, and once in twelve years it is estimated that the number of pilgrims traveling to Hurdwar numbers more than 1,000,000 souls, and they remain there from six weeks to two months.

Hurdwar is a small town on the river Ganges, just where that stream emerges through the Himalaya Mountains. The religion of the Hindoo makes it obligatory upon him to bathe in this stream at that point. It not infrequently happens in times of drouth that the stream at this place becomes nothing more than a series of pools, in which, however, everyone must bathe. Hindoos supposed to be dying, no matter of what disease, are put into the "sacred" water, and hundreds of sick are taken there for this special purpose. It is no infrequent occurrence that Hindoos in the last stages of cholera are immersed in the pool at Hurdwar in which there are hundreds of other people of the same belief bathing and swallowing the water of the "sacred stream." It thus becomes a focal point from which disease radiates.

It is from Hurdwar that epidemics of cholera proceed almost without exception. It is not clear where the disease comes from to Hurdwar, for in 1891 and 1892 it was known to exist in adjoining countries prior to the time that it made its appearance in that town, but on the 22d of March, 1892, there were several deaths from cholera in Hurdwar, and the authorities desiring to escape the fatality which usually attends an outbreak there closed the fair on the 25th of that month. Then the return movement of pilgrims began, the Afghans and Persians going to their







own countries, reached Cabul, the capital of Afghanistan early in April, and between April 19 and 29, 1892, upward of 6,000 deaths from cholera occurred in that city.

From Cabul the nomadic Afghan, with his wares from Hurdwar, continued his route toward Herat, a place 360 miles west from Cabul, and where the diseased-laden caravan arrived in May. The city of Herat is also a great market to which traders from India, China, Persia, and other places resort, and where trade has been carried on for many years, and caravans are fitted out there, carrying goods to other countries. In the city of Herat 2,000 deaths from cholera occurred within a short time after the arrival of the caravan.

Still west of Herat lies Meshed, one of the largest cities in northern Persia, also a trading place for goods from Hurdwar and the East. It has about 55,000 inhabitants, and is one of the "holy cities" of Persia, containing the tomb of Imam Riza, a holy teacher. During a portion of every year pilgrims go to Meshed from India, Afghanistan, and the neighboring countries, and it is estimated that more than 60,000 visit the tomb annually. It is not known definitely how many persons died here of cholera during the last epidemic, but at one time the number of deaths exceeded 200 daily, the first case appearing there in May.

From Meshed the disease was carried to Kaaka, a railway station on the Transcaspian Railroad within the Russian Dominions, and about 87 miles from Meshed, where between May 31 and June 22 45 cases of cholera and 41 deaths occurred. Once on the line of railroad, the progress of the disease westward was more rapid. On the 6th of June it appeared at Uzun-Ada, the terminus of the Transcaspian Railroad on the eastern shore of the Caspian Sea and 370 miles from Kaaka. From this point all traffic from the East for Russia crosses the Caspian to the city of Baku, in Russia, and the disease shortly thereafter broke out in the latter place in a violently epidemic form.

The city of Baku is a great petroleum center, the oil being sent in all directions throughout Russia and exported to Germany and Austria. It is reported that the city has a population of about 108,000, having grown very rapidly for the last few years because of the increase of commerce. The population is made up largely of Russians, Tartars, and Persians, the Asiatic contingent living in indescribable Oriental filth, without even a rudimentary idea of hygiene or sanitation. When cholera appeared in the city there were no quarantine rules and the sanitary arrangements were of the most primitive character—in short, were worthless. As soon as they could do so, it is estimated that 75,000 people fled from the city, scattering in every direction, hoping to escape the scourge, but carrying it with them. Some of the fugitives went by steamship up the Caspian Sea to the city of Astrakhan, which is situated in the delta of the Volga River, where the disease arrived about the 25th of June. The city of Astrakhan is low, some parts of it being walled to prevent the sea from entering. Its principal industry is the preparation of fish for market, and it is never cleanly or in good sanitary condition. Like many other places in Russia, there were no systematic sanitary arrangements employed to check the epidemic, and, as a consequence, when it made its appearance, many of the inhabitants were panic stricken.

The Russian Government sent physicians and assistants to attend the sick, and to do what they could to prevent the spread of the malady, but the ignorant people resisted their efforts, and many of the physicians were roughly handled, and it was with great difficulty that the mob was suppressed, the inhabitants insisting that the doctors gave them medicine only to kill them. The method of burial did not conform to the requirements of their ordinary religious practices, and they stoutly resisted every effort for the early burial of the dead, or the use of anything about the body, such as disinfectants, etc., which were intended to prevent the



contagion from spreading. In an attempt made by the governor of Astrakhan to institute proper sanitary methods, the violence of the mob was such that the governor's house was attacked, the windows smashed in, and many lawless acts committed, and the greatest resistance was offered to the removal of sick persons to the hospital; and it finally became necessary to send troops to quell the disturbances created by a simple effort to carry out the most ordinary sanitary precautions. It should be said that the resistance to these measures came largely from the Mohammedan population. The attempted enforcement of sanitary regulations occasioned riots in several other places. At Tashkent the governor's house was mobbed and two physicians sent by the Russian Government were hanged and others subjected to torture; Russian officials were killed, the hospitals pulled down or burned, and it was not until troops reached the scene and had killed more than one hundred of the mob that the disturbance was quieted.

In many places all aid was refused which had been offered by the Government; even the disinfectants sent to them they would not allow to be used, because they "interfered with the will of God." They declined to boil water or do any of those things which are known as prophylactics, because this was to interfere with the plans and methods of the Almighty, and anything which they believed might do this was resisted even to death. Under such circumstances nothing could be done but to let the people follow their own fatalistic ideas, and in consequence the cholera spread rapidly in every direction. From Astrakhan the cholera traveled up the Volga River, the great artery of Russian commerce and travel, 1,200 miles in twelve days, appearing at Saratov, Samara, Simbirsk, and Kazan (in which provinces the famine made such terrible ravages the preceding year), to Nijni-Novgorod, Moscow, and St. Petersburg.

At Nijni-Novgorod an annual fair is held, to which people come from all parts of the Empire, often bringing their families with them. The number of visitors frequently exceeds 200,000 people, who camp about the city, which has a normal population of about 75,000. The visitors make no sanitary arrangements and resent any interference on the part of the officials for such arrangements; consequently there is a total disregard for all such measures. Never clean at its best, the influx of traders with their animals adds to the existing filth and makes this place a focus from which disease spreads in all directions.

It was on July 19 (July 7 old style) that cholera made its appearance at this place; but notwithstanding this fact, the fair was opened on July 27 and the disease was doubtless carried by rail to Moscow, which is but twelve hours ride by rail, and from which city many traders go with their goods to Nijni-Novgorod. From Nijni-Novgorod or Moscow it spread to St. Petersburg and other places in northern and western Russia. Let us now return to Baku, at which point the epidemic entered European Russia. From this city one of the principal lines of railroad extends through the region of the Caucasus. The city of Tiflis is the seat of government for the Caucasus, and some of the inhabitants from Baku fled to Tiflis, introducing the disease into this region, which has been a hotbed for its development in every one of the preceding epidemics.

Cholera is especially virulent in this province; the intense heat of the summer months and the unsanitary conditions contributing to its development. During the month of June there were officially reported 20,000 deaths in twenty-three days, in a normal population of from three to four millions; but as nearly all who could go away did so, it was estimated that the normal population was decreased at least one-third if not one-half; and it is known that very many deaths were not recorded, so that it has been estimated that in the province of the Caucasus there were about 30,000 deaths in thirty days in a population estimated at 2,500,000. The official figures of the number of deaths from cholera in the province of the Caucasus alone from June to October, 1892, are as follows: One hundred and thirty-eight

thousand seven hundred and eighty-one cases, and 68,353 deaths. Figures taken from "The Cholera Epidemic of 1892 in the Russian Empire," by Frank Clemow, M. D., St. Petersburg, 1893.

The disease has been very active in the same region since then, and broke out with renewed energy during the present summer (1893).

The Transcaucasian Railroad, which carried cholera to the Caucasus, transported it also to Batoum, on the Black Sea, which is the principal shipping port for produce from the Caucasus, and from which point the disease found easy ingress to the rivers Don, Dnieper, Dniester, and the Danube, the waterways of southern and western Russia, all emptying into the Black Sea, and up which streams the epidemic quickly traveled.

In Russia exact statistics are as difficult to obtain as they are in more eastern countries. A conservative estimate, however, based upon the known mortality in those provinces of the Empire in Europe where cholera raged with greatest intensity, places the number of deaths up to the end of November, 1892, as upward of 300,000; and does not include the large numbers who died from this disease in the winter of 1892 and during 1893.

The consensus of opinion among sanitarians with whom we conversed concerning the spread of the cholera epidemic throughout Russia was to the effect that had proper sanitary precautions been taken at the principal seaports, and at those places where the malady made ingress over railroads and waterways, it could have been controlled. It is known that troops came direct from cholera-infected regions, marching away from them to escape its ravages, and went to uninfected localities, passing the semblance of quarantine stations by falsely representing that they came from regions where cholera did not exist, thus carrying it to new and uninfected places.

The total lack of information possessed by the common people of the country with regard to the cause of the disease, the filthy habits and unsanitary conditions which are observable among the people of the rural as well as some of the urban places in Russia, together with the various superstitions which to a great extent control the life and actions of the Moujic as well as the Mohammedan, accounts for the frightful ravages of cholera in that country.

Dr. Clemow in the work above quoted, in writing of the cholera among the Russian subjects, says that throughout the Caucasus there is no system of drainage, the "dead wall" being the method used to dispose of sewage. The "dead wall" is a hole in the ground about 57 feet deep, which is gradually filled up with human excrement. This system having been long continued has polluted the soil so much that the report of the medical department upon this subject states "that a foul odor is observable in the basements of many houses and in some ice cellars in towns where this system is in use." Thus wells and springs, the sole source of water supply, may be readily contaminated.

In the Caucasus many of the people live in houses which are partly underground, the roof being not more than 2 feet above the surface, light being admitted through holes in the roof, which are closed at night or whenever it may be necessary to keep in the warmth. In the center of this establishment is a large room in which the cattle are kept, who share the same roof with their masters for about six months in the year. In the living rooms there is sometimes a hearth, in which dry cow dung is used for fuel and for cooking the food. The establishment is rarely ventilated, the excreta from human beings and from cattle remaining in the inside of the house, and is very rarely removed. Dr. Upenski, a Russian, forced by a snowstorm to enter one of these houses, after remaining a few moments left the place, facing the storm as a lesser evil. The well which supplies the household with water is often under the same roof, and not infrequently near the "dead wall." It is, therefore, little wonder that cholera rages in the

Caucasus, especially when we take into consideration the religious prejudices of the Mohammedans and the fatalistic ideas of the Russians.

Dr. Clemow states, page 13, that many of the people "are like the Caucasian highlanders, who change their linen only once a year, on the feast of Bairam," and excrement of all kinds is piled up about their huts.

The doctor also states that at all times the majority of deaths in this part of the country (the Caucasus) is from gastro-intestinal catarrh, and adds "so long as the cause exists, and particularly so long as the water supply of the towns and villages remains what it is, and the local authorities continue indifferent as to its source and purity, the Russian people must form a happy hunting ground for the cholera bacillus, and in all probability all efforts to check its spread when once it has passed the frontier will be futile."

In all parts of the country it is usual for the poorer people to wash their filthy clothing in the streams, thus disseminating disease germs. This habit was continued during the period of the cholera, and more than one outbreak of the disease was traced to this source.

The staple of diet among the Russian peasants is rye bread, which is black and acid, causing diarrhea in those not accustomed to it, and a soup made of fermented cabbages; and dried fish, salted herring, raw cucumbers, and melons. They use very little meat.

The common drink of European Russia is called Kvass. In St. Petersburg the authorities directed the public analyst to examine this material in the summer of 1893, and he reported that every sample furnished for analysis was "unfit for human use." Kvass is made from the fermentation of black bread.

From Dr. Clemow's work we extract the following figures concerning former epidemics of cholera in Russia, which he states are only approximate:

| Year.       | Cases.    | Deaths.   |
|-------------|-----------|-----------|
| 1831 .....  | 466,457   | 197,069   |
| 1848 .....  | 1,742,439 | 690,150   |
| 1853 .....  | 249,788   | 100,083   |
| 1855 .....  | 331,025   | 131,327   |
| 1871 .....  | 322,711   | 124,831   |
| 1872 .....  | 310,607   | 113,196   |
| Total ..... | 3,423,027 | 1,356,656 |

The final total for the epidemic of 1892-93 has not been given, but Dr. Clemow states that to the 1st of December, 1892, the total number of deaths from cholera "officially reported" was 267,880. This, it will be seen, was the largest number of deaths occurring in any epidemic since 1848, and the percentage of deaths for 1892 "is the highest ever reached, being 45.8 per cent."

In some of the Siberian provinces the disease raged with great violence. In the province of Tobolsk the total number of cases reported was 26,301, and of these 12,729 proved fatal. In Tomsk there were 4,697 cases among exiled prisoners and 2,272 deaths.

No reliance can be placed upon what some of the Government officials called "quarantine measures" or "sanitary regulations;" in most places where they were attempted they were inefficient and proved to be no barrier to the onward movement of the epidemic.

The condition of filth remaining after the "sanitary regulations" had been put in force was such as to invite disease and become a focus for infection.

An instance illustrating the general disregard of proper sanitary conditions is related by U. S. Consul Thos. E. Heenan, of Odessa, who states that the governor-general of the province issued invitations to a dinner given in the city of Ashabad



to celebrate the disappearance of the cholera from that place. Of the numerous guests that attended the dinner one half of the number were dead within twenty-four hours, and forty-eight hours thereafter 1,500 people had died of the disease disseminated from this place. Investigation showed that the cause of the outbreak was due to the contamination of a stream of water which supplied the town, near which some roving people had camped, some of whom had died of cholera; a heavy rain washed the dejecta into the stream, which carried the germs into every part of the city, causing terrible mortality. There are no well advised sanitary regulations carried out even in the principal cities in the Caucasus, and at Tiflis, the seat of government, the examinations made of people passing over the railroad and the effort at disinfection of their goods was worthless. People direct from cholera-infected regions went to and fro, baggage and all, without disinfection or detention.

It is difficult to trace the disease from Russia westward. The route by which it reached Hamburg is a mystery; whether it came overland to that city via Russia, or whether it came, as some believe, direct from India, on ships plying between Hamburg and that country, is not known. The doubtful policy of the officials in Germany and France, who attempted to keep the disease a secret, a policy which, so far as France, is concerned, continued through the summer of 1893, endangered the lives of thousands and deprived sanitary history of very important facts. Whatever the route may be by which it came, it was quite general throughout France, during the summer of 1892, being most severe in the provinces of L'Orient and Bouches du Rhone, one on the northern, the other on the southern coast of France.

Having shown the route over which cholera invaded Russia let us return to Meshed, at which point it will be remembered the disease branched off to Kaaka, on the Transcaspian Railroad. West of Meshed lies the city of Teheran, the capital of Persia, about 60 miles from the coast of the Caspian Sea. It is always an unhealthy city, which is deserted during the summer by all who are able to leave. Like most Eastern cities, it is exceedingly filthy, no sanitary precautions being taken. Near Teheran is a famous shrine, to which those who consider themselves much oppressed resort. During the period when the cholera was most active in the city the religious teachers directed a body of pilgrims numbering about 1,500 to go to the shrine. The throng started, spreading cholera along the route and losing by death the greater part of their own number. It is estimated that during the continuance of the scourge at Teheran upward of 10,000 people died. From Teheran the disease crossed the country in a northwesterly direction to Tabreez, which is a famous market place for goods from Persia, India, Turkey, and the Black Sea; thence it went to Erzerum, a place with narrow, filthy streets, infested with dogs, and always in an unsanitary condition. From Erzerum there is a large exportation of wools which come from the interior, sometimes leaving the country from the port of Batoum, or from Trebizond, the latter being one of the most important seaports of Turkey and the natural entrepôt for goods from Persia, Turkey, and the East. Cholera was taken to Trebizond by troops, who carried it through the sanitary cordon.

There is still another route to be described over which cholera has traveled in former epidemics. Starting from Hurdwar as usual, it crossed the country by caravan to Kabul, thence by a northwesterly route through Balkh, traveling along the valley of the Oxus River to Bokhara and Khiva, and across the Kirghiz steppes to Orenburg, in Russia, and to Omsk and Tomsk, in Siberia, this being the course that commerce from the East ordinarily took, prior to the building of the Transcaspian Railroad by the Russians. The construction of this railroad will undoubtedly play a most important part in conveying the infection of future epidemics to the Caspian Sea and beyond. In the epidemic of 1892 we know that the progress of the disease was accelerated by the circumstance of infection traveling from

Meshed to the railway station of Kaaka, on the railroad to Uzun Ada, thence across the Caspian to Baku.

Commerce is not slow in finding its way to rapid transit; sooner or later wares from the East will abandon the slow progress made by caravans and reach the Transcaspian Railway by shorter routes than via Meshed and Kaaka. The distance from Kabul to Merv is not much greater than from Kabul to Herat. Already a line of railroad has been projected from Merv to Kabul, which when completed will shorten the time that it now takes to go from Hurdwar to Baku by at least three months. The Transcaspian Railroad passes through Merv, at which place there is an important station. The first route referred to proceeds from Hurdwar to Kabul and Herat, thence via Meshed to Astrabad, Teheran, and Tabreez; thence turning northward to Tiflis, in the Caucasus, and still proceeding westward to Erzerum and Trebizond, on the Black Sea. Having always the same starting point in India, it proceeds in a northwesterly direction, following the lines of travel and commerce toward the Caspian and Black seas, or it takes still another, a southwesterly course, from Calcutta and Bombay across the Arabian Sea, through the straits of Bab-el-Mandeb into the Red Sea; thence by Suez to the Mediterranean. Since the opening of the Suez Canal commerce from the East seeks its outlet through this channel, and pilgrims from northern Africa and Turkey in Europe to Mecca and Medina also take this route. (See map.)

At the period of the pilgrimages to the so-called "holy cities" the disease is conveyed from India across the Arabian Sea to the province of Hedjaz, a country bordering upon the eastern coast of the Red Sea, and in which are situated the cities of Mecca and Medina, to which places all Mohammedans are expected to make at least one pilgrimage, and in June, 1892, cholera-infected pilgrims from India began to arrive in the "holy cities." Prior to this time, however, in the autumn of 1891, cholera had been epidemic in the southern part of Arabia, raging with great intensity in the province of Yemen, on the southern borders of the Hedjaz. It was introduced into this province by a party of slaves who were brought into the country from Africa, which is but a few miles distant from the province of Yemen. There was at the time a rebellion in the province and many troops had been sent to quell it. The troops contracted the disease from the slaves, and by them it was spread to all parts of the province. While there is no direct evidence of the fact, it seems to be quite clearly established that troops returning to the northern portion of the country carried the disease into Syria.

The Turkish Government made an effort to prevent its extension from the province of Yemen, but the people would have none of it, and the health officials were driven away. It was not until it exhausted itself that the disease finally disappeared. At the city of Hodeida, in this province, it is known that there were more than 3,000 deaths from cholera, but only 750 were officially reported.

In the autumn of 1891 the disease appeared in Damascus, Beirut, and other places in the northern part of Turkey in Asia, having been carried there by troops, and there is some warrant for believing that there were sporadic cases of cholera during the following winter months in the neighboring province of Aleppo. To protect the "holy cities" from the frightful epidemics of cholera which occur there during these pilgrimages, quarantine stations have been established on the island of Camaran in the Red Sea, about 60 miles from its southern entrance and near the eastern coast, and another at El Tor, near the northern extremity of the Red Sea at the entrance of the Gulf of Suez.

The island of Camaran is about 60 miles south of Mecca and close to the eastern shore of the Red Sea, but at least 20 miles from the western shore, or the coast of Africa. (See Map.)

The condition of this establishment is best described by the official documents obtained from the health officers at Constantinople already given. It is sufficient

to say here that it is in the most unsatisfactory condition and does not answer the requirements for which it was established. The pilgrims have an intense dislike to quarantine, saying that it does no good; and as it has been hitherto conducted, they are right. The quarantine at Camaran did not prevent the disease from reaching Mecca and Medina, where the ravages have been severe. The mortality during the epidemic of 1891 among the pilgrims who went by sea has been ascertained with considerable accuracy, but these figures do not take into account the vast numbers who went there by land.

Of the number who went by sea 46,953 pilgrims disembarked at Djeddah (the seaport nearest Mecca) and but 25,253 returned; 21,700 are believed by the Turkish authorities to have died of cholera or other diseases at or near Mecca. Pilgrims returning from Mecca and Medina to the northern coast of Africa, Tripoli, Algiers, etc., are subjected to quarantine at the station of El Tor, near the entrance to the Gulf of Suez. A report made upon the condition of affairs at that station, where it is not uncommon for hundreds of people to undergo quarantine detention, shows that quarantine regulations are insufficient, and we were told by the health officers that efficient work is impeded there by the Arab physicians. The drinking water, a mixture of rain and brackish water, is entirely unfit for use. Of the eight wells "only two supply fairly good water, and not in sufficient quantity." It is carried in open vessels on camels to the several sections of the camp and is warm and foul smelling. They have at this station a steam disinfecting plant. The process as carried on by the officials lasts from five to eight minutes. The clothing, etc., is not and can not be efficiently disinfected in that short time. Dr. Kaufmann, who made an examination of that place, reported (in the *Hygienische Rundschau*, Berlin) that he "caused a thermometer to be put into the apparatus among some clothing at the commencement of the disinfecting process, and when the goods were taken out it showed an increase of only one-tenth of a degree. Wax, paraffin, and sealing wax were not melted, and bacilli put in for the purpose of ascertaining the effect upon them were not injured." Said he: "The apparatus is too small and the time too short to do the work required, and the disinfection of ships and tents is altogether defective. This method of disinfection, supposed by those who undergo the process to be effective, in reality tends to spread every form of disease which may be contagious or infectious. The only way by which the station can be made effective is to introduce a supply of water, new management for the disinfecting apparatus, and placing the establishment under the charge of European physicians who will enforce sanitary discipline," and prevent diseases from passing this important station and finding exit into the Mediterranean.

As to the sanitary conditions obtaining at the cities of Mecca and Medina, they may best be understood by a brief description of the places. Mecca is situated a few miles inland from Djeddah, its port on the Red Sea. The city is in a narrow, desolate valley, having a stationary population of between 30,000 and 40,000, who subsist entirely upon the visiting pilgrims. The streets are narrow and extremely filthy, as there are no regular sanitary precautions. The little that is done in this direction is carried out by the Turkish Government just as the pilgrims begin to arrive, and consists of an order to the local authorities to have the city cleaned. The order is not obeyed, because they say they have no money to do the work with.

In 1892, however, a small appropriation was made by the Turkish Government for this purpose. A little over \$7,500 was given for cleaning both Mecca and Medina—not one-tenth of the sum required. (*See Report Council of Ministers, dated March 25, 1892, supra.*)

The city is poorly supplied with water and there are no sewers. Cess pits, which are used as water-closets and rarely emptied, exist at the larger houses, while in the poorer parts of the cities even these conveniences are dispensed with, the gutters being used in place of cess pits.



The city is the birthplace of Mohammed, and the seat of the Mohammedan religion. The "Great Mosque" incloses the caaba, or "sacred house," in one angle of which is exposed a small black stone, believed by Mohammedans to have been brought to earth by angels from Heaven. To kiss the black stone is the chief object of the pilgrimage. In a house near by the mosque is a famous well, said to be the one from which Hagar obtained water for Ishmael. They believe the water to be a sure remedy for all bodily ailments, and that it refreshes the soul. To kiss this stone and drink a little of the water from one to two hundred thousand pilgrims visit the place annually. The method of securing the water is one that needs a moment's attention. The pilgrim presents himself at the well curb nearly naked. The attending official takes a large dipper of water from the well, and raising it above the head of the pilgrim, empties it upon his upturned face.

Believing in the virtue of the water, they swallow as much of it as they can; the balance, passing over the surface of the body, returns to the well; the process being repeated until the last one has gone away. Dying pilgrims are conveyed to the well, supported by friends, that they may obtain a few drops of the water, cheerfully yielding up life at a spot so sacred; hence, cholera germs are continually carried into the well, which becomes a veritable fountain of death.

Two hundred and forty-eight miles north of Mecca is the city of Medina, a place of about 20,000 inhabitants. It is much more cleanly than Mecca. Situated on a hill, the opportunities for drainage are good, and it is supplied with an abundance of water brought to the city by means of a conduit, said to be 25 feet underground. This empties into a large basin from which the inhabitants draw the water. The tomb of Mohammed is in a small mosque; as the nobility alone are permitted to enter the precincts, and only upon payment of a large sum of money, not all the pilgrims go there; although it is estimated that from one-third to one-half the number who live to get away from Meccamake the pilgrimage to Medina. These two cities are the focal points toward which Mohammedan pilgrims direct their steps from all parts of the world. Those who come from countries infected by cholera, bringing the scourge with them, communicate it to those who come from parts of the world where it does not exist; and who returning to their homes carry it with them. The importance of keeping these cities free from the disease is apparent, and until this can be done the conditions will be as they have been heretofore, and infection and reinfection will be continued.

The value of quarantine methods on the island of Camaran, regarded by the Turkish Government as one of the most important if not the most important of their quarantine stations, may be best illustrated by reciting the facts concerning the introduction of cholera into Mecca and Medina in 1892. It has been stated that the quarantine station at Camaran was established for the express purpose of protecting the "holy cities" from the invasion of the disease; and it is the intention of the Turkish officials to require all vessels having on board persons ill with cholera to go to the island of Camaran, and there submit to the necessary quarantine before proceeding to the "holy cities." We were informed by one who knew the circumstances that a ship having on board several persons ill with cholera, instead of going to the station at Camaran, where it was known they would be detained until all symptoms of the disease disappeared, landed its passengers at the port of Hodeida, a few miles south of Camaran, and making a detour around the station they proceeded on their way, taking ship beyond the quarantine station and landing at Djeddah without having been quarantined, but taking with them the scourge.

Europe is not safe from the invasions of cholera, and will not be until the countries wherein there are the greatest fatalities become more completely civilized, or until the governments of the earth take the matter in hand and organize for self-protection.

Official bustle at irregular intervals and when the disease is upon them will not disturb the deeply rooted religious convictions of centuries; and the slipshod manner in which the quarantine stations are managed affords no protection. Hence, so long as the conditions remain as they are, Europe and America must submit to the great loss of life and the enormous expenditures of money now made to protect themselves.

Persia makes no effort of any kind to suppress the disease. On the contrary, much is done to spread it. In illustration of this point, it is only necessary to state that there is a religious belief among the Persians that entrance into the Kingdom of Heaven is much more certain if the bodies of the faithful dead are buried in the "sacred" soil of Kerbela, and Nejif in Mesopotamia. Bodies of those dead of cholera as well as from other diseases are carried in some instances hundreds of miles that they may be buried in this "sacred" soil. If the deceased was wealthy the body is carried on, no matter how many bearers may die on the way or what number of places become infected by the disease. It is to them "the will of God," and there the matter ends. It must be borne in mind that the dead are not carried by railroads, for there are none. They are carried by camels or on donkeys, and sometimes by men in a species of basket, and they often leave a trail of death along the entire distance over which they travel. As embalming is not practiced, the condition of affairs may be better imagined than described. Orders have been issued from time to time, especially during periods of epidemics, to prevent carrying the dead, but there is little or no attention paid to it; and as there are no telegraphs or newspapers it is doubtful whether the orders are known beyond the official circle that gives them origin. As belief in the burial of the dead at those places is a religious conviction, the only way to prevent its continuance would be by armed force.

The extent to which this practice is carried is given by Dr. Macnamara, who investigated the subject and who states that in one season there passed through the station of Khanekin, which is on the boundary between Persia and Turkey, 52,053 pilgrims, with 64,138 beasts of burden, 4,504 muleteers, and 2,837 loads of human corpses; allowing three dead bodies to a load, the usual number carried by a camel, this would give over 8,000 corpses to be buried at Kerbela and Nejif in one year. Arriving there, the bodies are buried in the sandy soil, the grave generally so shallow that the wind blows off the sand and leaves the body exposed, a prey to dogs, vultures, etc. There are no regulations carried into effect requiring proper sepulture of the dead. Speaking of this custom, one of the health officers told me that during the advance of the cholera epidemic of 1892, the Turkish officials issued an order prohibiting for the time carrying the dead brought in this manner into or through the Turkish dominions; but we were informed upon reliable authority, a quarantine officer, that "the order is not enforced, and the custom goes on as usual."

The educated physicians of Turkey have repeatedly called the attention of the Ottoman Government to the deplorable state of quarantine and sanitary affairs throughout the dominions, and they have said, over and over again, that where quarantine is supposed to exist it is of no practical value, and the official reports already quoted bear out the statements.

One of the most distinguished physicians in Constantinople said to us: "At many places in Turkey lazaretto (quarantine) means two or three tents without a physician, without water, and a few soldiers to tax the travelers." Turkish officials charged with carrying out quarantine regulations are unable to do what they know to be necessary, because their powers are limited and only advisory, and the Government has but little money to carry out its own regulations. We were told that the important quarantine station at Camaran is closed during a considerable part of each year, sanitary officers being sent there to put the place in order before

the annual arrival of pilgrims. They are destitute of appliances to carry out ordinary quarantine regulations, while in emergencies they are practically powerless. The disease has been carried around the station on land, and vessels with cholera on board have sailed past the station direct to Djeddah unmolested, although a Turkish war vessel is anchored off the island.

The health officers in some of the provinces of Turkey are required to report to the central authorities at Constantinople only once in six months. An epidemic may therefore begin, run its course, and cease before the central authorities know of its existence. We were told that it sometimes happens that the first intelligence of the existence of plague, which occurs in the rice-growing provinces, is the appearance of the disease in Constantinople, brought there by pilgrims; and we learned that although Malta had quarantined against the plague for two months, its existence had not been "officially" declared in Constantinople at the date of our visit. Not only is this true with reference to diseases affecting human beings, but it is also true of the frightful epidemics of disease among cattle, which is said to resemble cholera, and which often destroys entire herds. It commences and ends before any orders are issued looking to its restriction.

The dead bodies of the animals are thrown into rivers which often furnish drinking water for the people lower down the streams.

Sometimes the hides taken from carcasses of these animals are sent into the market unmarked and without disinfection. A few years ago the Nile was choked at one place by the bodies of cattle dead of this disease, and it was necessary to use steam apparatus to get them out of the stream. An instance of the loose methods of conducting quarantine business was related to us. It appears that the number of vessels coming into Turkish ports without bills of health of any kind became so large that it was considered necessary to make some regulations with reference to it, and a commission was appointed to prepare the rules. After duly considering the subject they suggested that a fine should be imposed upon such captains as seemed to wantonly disregard the rules; then added: "But if the captain can show that he was obliged to start without a bill of health, or had lost it on the way, then he should not be fined, and the vessel could come into port as though provided with a bill of health." We were told that it frequently happened that three or four ships a month came to Turkish ports without bills of health and the authorities went through the form of fining them, but, said our informant, "our laws are poorly administered, for we have not the means to carry them into effective operation."

It was only at the time when cholera was making rapid advances toward the Turkish Empire from Persia that orders for establishing the quarantine station at Sinope were given. The project had been recommended by the superior council of health over and over again, but the recommendations had been disregarded. When the disease was close upon them the necessary orders were given and a hastily constructed quarantine station, in no sense competent to do effective work, was built.

Sinope is about midway between Batoum, the most easterly port on the Black Sea in Russia, and Constantinople, at the western end. (*See Map.*) It is in Turkey in Asia. Vessels from Trebizond and other ports along the southern coast of the Black Sea find refuge in the magnificent harbor here afforded. The quarantine station is near the extremity of the peninsula, which extends for some miles into the Black Sea, and is most admirably situated for such purposes. At present it lacks proper equipment. It was intended to relieve the quarantine station at Cavak, located at the entrance of the Bosphorus into the Black Sea, a few miles from the city of Constantinople, and directions were given that all vessels having cases of cholera on board should be sent to Sinope, instead of treating them at Cavak.

The quarantine station at Cavak is one of the most important in the Empire.



Vessels entering the Bosphorus from the Black Sea having on board cases of infectious disease and bound for the port of Constantinople only a few miles distant are quarantined there.

The documents already given show how frequently attention has been called by the health authorities to the imperfections of this place as a quarantine station.

The International Sanitary Commission early in 1892 suggested that floating hospitals or hulks of vessels should be anchored near the quarantine station where cholera cases could be taken for treatment; but the Ottoman Government disapproved the suggestions made by the commission and ordered small barracks to be put up near by, and to have the quarantine station made as perfect as sanitary science could suggest, but at the date of our visit in April, 1893, but little of the work had been done.

Quarantine regulations as now maintained by all civilized nations are disregarded in Mohammedan countries because they are not mentioned or recognized in the Koran, therefore progress in sanitation will be very slow while the Koran is the law. Argument will do no good. Precept and example are valueless. The civilized world must face the fact that while present methods prevail they must be content to suffer the awful consequences of the scourge, the losses by death, the enormous expenditure of money to protect themselves in order that the religious observances of the Mohammedans may go on uninterrupted.

The epidemic of 1851 killed no less than 53,293 men, women, and children in England alone, and since 1817 the destruction of life in Europe has not been less than 2,000,000 human beings before the epidemic of 1892.

The deaths from cholera in Russia during 1892 will exceed 300,000, and the end is not yet. These numbers are exclusive of the frightful mortality in the Mohammedan countries. It is believed that the loss of life in Persia in 1892 exceeds 250,000.

France estimated that the financial losses caused in that country by the epidemic of 1884 exceeded 400,000,000 francs. Hamburg estimates that the loss to that city during the epidemic of 1892 amounted to 15,000,000 marks a day, but no estimate has yet been made public of the enormous financial loss sustained by the German Empire during the last epidemic.

Cholera invaded the United States for the first time in 1832, and since then there have been six epidemics, in 1834, 1849, 1852, 1866, 1867, 1873, and a few cases in 1886. Nearly all of them were attended with great loss of life, to say nothing of commercial disturbances and financial losses. In 1892 it again came to our shores, and nothing but extraordinary precautions, involving the expenditure of immense sums of money prevented its entrance. Such was the general anxiety of the people that the sum made available by Congress to prevent the introduction of cholera and other epidemics into the United States for the year 1893 amounts to about \$900,000.

But, it may be said, that such close quarantine would cause an interruption to commerce; this is to say, greed of wealth is willing to sacrifice thousands of lives and millions of treasure that a few dollars may be gained.

England is the one country that cries loudest against "severe quarantine restrictions." Let us see what the practice of that Government is when the facts are placed side by side with her theorists.

At the sanitary conference held in Paris early in 1892 England was foremost in making an outcry against "severe quarantine restrictions," demanding "diminished severity" toward those who might have "traveled on the same ship with one or more cholera patients, and urging that, if the nations would but follow the lead of England, "useless detentions might be avoided" and quarantine improved. This is England's theory. Now for the practice. At Malta, where there is danger of cholera coming to the island from several directions, the following quarantine

regulations were put into operation July 21, 1892, more than a month after the Paris conference had adjourned, and they were still in force at the date of our visit to Malta in March, 1893.

Section 1 of the regulations is as follows:

"Vessels with pilgrims from the East or having had cases of cholera on board, as well as all vessels having or having had on board cases of diarrhea, which in the opinion of the quarantine medical officer may be presumed to indicate cholera, shall not be permitted to enter this harbor."

Section 11 reads as follows:

"Passengers arriving from Egypt, Syria, and ports in the Red Sea will not be permitted to land at Malta unless they produce evidence satisfactory to the port authority that they have not resided or been in Arabia for the twenty-one days previous to their departure."

On March 10, 1893, the following regulation was added and put in force, which prohibits the authorities from landing anyone who may have had diarrhea while on shipboard, even when coming from England, where there had been no cholera:

"Passengers arriving direct from England on vessels having a duly qualified medical officer on board are to be allowed to land without medical inspection, provided that the medical officer in charge on board shall declare on oath that during the voyage there has not been on board a case of dysentery, diarrhea, choleraic cholera, or any disease with symptoms resembling cholera, either among the passengers or among the crew," and "the declaration above referred to shall be countersigned by the master of the vessel."

These regulations show that when the authorities of the English Government are brought face to face with a real danger of infection their quarantine regulations are as severe, if not more so, than those of any other nation.

There might be some force in the idea that prohibitive quarantine would interrupt commerce if the necessities of life came from the quarantined countries; but this is not the fact. The principal exports from Persia and Afghanistan are wools, carpets, rugs, skins, a few hides, and some drugs and gums, and if the export of these goods was to be interdicted during the inception and continuance of the epidemic the countries producing them would find some way to correct the evils we complain of and commerce be resumed.

Persia and the Eastern countries will make no advances in sanitation or any effort to keep the disease within their own boundaries until influences are brought to bear which will appeal directly to the pockets of the people. They are sharp traders, quick to take advantage of any plan which will bring money to their coffers by increase of trade.

An international agreement which would totally prevent all intercourse, either commercial or by travel with the well-known centers of infection, until proper sanitary precautions are maintained to prevent the extension of the disease, would bring about a change of sentiment in the now indifferent countries, and would be an object lesson to them which they would not fail to learn quickly.

Religious observances must not be interfered with; but the observers of such religious practices as are liable to decimate adjoining countries must be made to understand that while their neighbors do not propose to interfere in any way with their rites, they must take care not to cause the death or endanger the lives of hundreds of thousands of their neighbors; but if they continue to do so, then they should be confined within the limits of their own territory while those rites are being performed.

There was a time when the followers of Mohammed believed it to be their religious duty to put to the sword those who did not choose to accept his religious tenets, and made incursions into neighboring countries where they slaughtered men, women, and children who did not promptly accept the teachings of the "Prophet."

Physical force from other nations put a stop to that form of "religious observance."

The loss of life and treasure is no less burdensome when caused by a bacillus than when caused by a sword; the one is as fatal as the other, yet for some unexplained reason the world regards death by a cholera bacillus with comparative complacency, while death by the sword is regarded with horror, rousing the civilized world to quick indignation and rebuke.

If those people who, in the name of religion, now scatter the seeds of death broadcast over the earth were to be inclosed within their own countries during the continuance of their deadly observances, by the united effort of civilized nations, it would not be long before the followers of Mohammed would unite with other nations in a supreme effort to strangle this Moloch in the place of its birth.

International action will stop invasion of cholera.

WALTER KEMPSTER, M. D.,

*Special Commissioner.*

FAIRFAX IRWIN, M. D.,

*Surgeon, Marine-Hospital Service.*

NOVEMBER 30, 1893.





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